NOVEMBER 24, 1997 VOLUME 14, NUMBER 47

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

Bay Networks is readying ATM access gear. Page 6.

Java terminal a Wyse idea

Full-blown NCs are overkill, terminal giant claims.

By John Cox
Las Vegas

Wyse Technology, Inc. has scrapped its plan to bring out a standard Java network computer, claiming its customers say the current NC concept has serious flaws.

"The NC as defined today won't fly," said Jeff Mc-Naught, general manager of the company's Winterm product line.

Instead of releasing its Winterm 4000 network computer, Wyse now plans to release a new type of Java-oriented desktop device, which the terminal vendor calls a "Java network terminal." The Java terminal, as the name implies, will rely almost entirely on servers for processing, using small local Java applets to control the local display.

The new unit, the Winterm 4010, will be the first in a line of Java terminal devices, according to McNaught. It will host a stream-

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COMDEX

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- Novell CEO Eric Schmidt says IntranetWare is out. **Page 14.**
- Thin clients create Comdex buzz. **Page 16.**
- Has Comdex outlived its usefulness? **Page 16.**

ONLINE
- A complete wrap-up of speeches and announcements
- Overviews of different approaches to network computing

www.nwfusion.com

DSL delay dogs UUNET

By Denise Pappalardo
Fairfax, Va.

UUNET Technologies last week confirmed it has fallen far behind on its plan to deliver digital subscriber line (DSL) coverage in more than 90 U.S. cities by year-end.

The national Internet service provider's Preferred Access 128, an ISDN DSL (IDSL) 128K bit/sec service, today is available in Boston, the New York metropolitan area and 23 cities in California.

So why is the service ready only in a handful of areas when UUNET was supposed to be nearing national deployment by year-end? The incumbent local carriers are the ones gumming up the works, claimed Alan Taffel, vice president of marketing and business development at the Fairfax, Va.-based ISP.

And all this is costing users money. The lack of ubiquitous DSL service is forcing companies like BMW Manufacturing Corp. to buy services that do not match the

See **UUNET,** *page 20*

The Bells and GTE are delivering DSL services. Page 20.

Government EDI plan fails to sell

By Ellen Messmer
Washington, D.C.

Three years ago, the U.S. government passed a law that forced federal agencies to make small purchases electronically. This way suppliers could compete openly for approximately $20 billion in government business by sending bids to an electronic data interchange-based network called the Federal Acquisition Computer Network (FACNET).

Built two and a half years ago, the network handled $226.19 million in awards that involved 457,133 electronic commerce transactions in fiscal 1997.

But the Clinton administration, once an enthusiastic supporter, now is set to ax the existing FACNET requirement, leaving the future of this ambitious

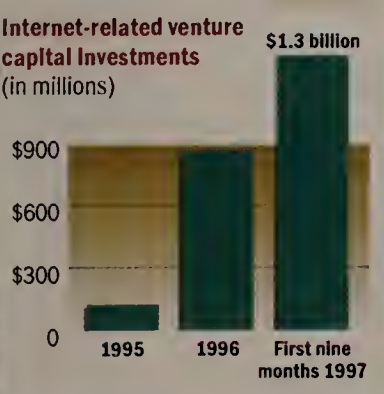
See **FACNET,** *page 67*

Internet companies in the money

Venture capital is flowing into Internet, telecom and other network start-ups, according to a new Price Waterhouse survey. Check out page 8 for survey results that have been broken out specifically for *Network World* readers.

Price Waterhouse / Network World VENTURE Survey CAPITAL

Internet-related venture capital investments
(in millions)



HP revisits management data repository

By Jim Duffy
Fort Collins, Colo.

Just when you thought Hewlett-Packard Co.'s common data repository was dead, the company comes along with a data warehouse.

HP plans to add a data warehouse to the next major version of OpenView's Network Node Manager (NNM), which is slated for a summer 1998 release. The idea is to enable users to more proactively manage their networks by making trending and

See **HP,** *page 67*

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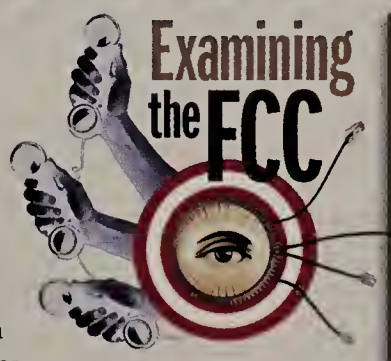
Fixing the FCC

Third in a three-part series

The agency can get past its problems and make telecom reform work. Here's how.

By Susan Breidenbach



With four new members on board, including a new chairman, there's a chance the Federal Communications Commission can turn things around and make sure the next two years aren't like the last two. To pull it off, the commission has to recognize why it has failed to foster the kind of competition envisioned by the framers of the Telecommunications Act of 1996 and, with help from Congress in some areas, take corrective measures.

For starters, the interconnection rules governing how competing carriers link their networks need to be rewritten with the right players in mind — the entrepreneurs and technology leaders who are creating next-generation equipment and services. The rules need to be simple and transitory, with as much left up to negotiation as possible and with deregulation as the ultimate goal.

The rules also have to be backed with swift, sure enforcement that includes sufficiently severe penalties for noncompliance. And the legal proceedings that are paralyzing reform should be streamlined and consolidated along

See **FCC,** *page 47*

Alfred Kahn, the man who orchestrated the deregulation of the airline industry, has some choice words for the "arrogant bunch of bureaucrats" at the FCC. See page 50.

Not all endorsements require a professional athlete with a $40 million contract.

E-1000 Low Cost Network-Ready Desktop ■ Intel® 166MHz Pentium® Processor with MMX™ Technology ■ 16MB SDRAM ■ 256K Pipelined Burst Cache ■ EV500 .28 Screen Pitch 15" Monitor (13.9" viewable) ■ Integrated PCI Video with 2MB DRAM ■ 1.2GB EIDE Hard Drive ■ 3.5" Diskette Drive ■ 16-Bit Sound Blaster® Compatible Business Audio ■ Integrated 10/100 Fast Ethernet ■ E-Series Low-Profile Desktop Case ■ 104+ Keyboard & Mouse ■ Microsoft® Windows® 95 ■ Desktop Management Interface (DMI) 1.1 Compliant ■ Intel LANDesk® Client Manager 3.01 **$1099** Business Lease †$40/mo.

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Hughes Defense Communications honors Gateway 2000 with "Supplier Excellence Award".

It was loud and cle[illegible] announced on Friday that Gateway 2000

Ocean Spray names Gateway 2000 supplier of the year.

More good [illegible] Division of Gateway 2000 as [illegible]

Union Pacific names Gateway 2000 supplier of the year.

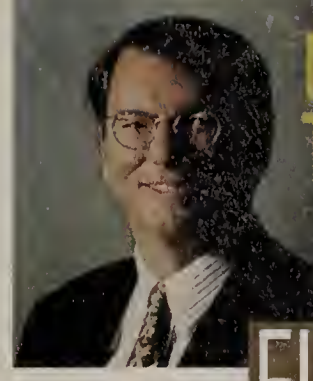
[illegible] full steam ahead for [illegible] major accounts division, as the [illegible]

MASSIVE POWER

Neo Networks launches massively parallel router for big backbones. Page 28.

DEEP CUTS

What to do when your net project funding gets slashed. Page 57.



NETWARE'S THE NAME

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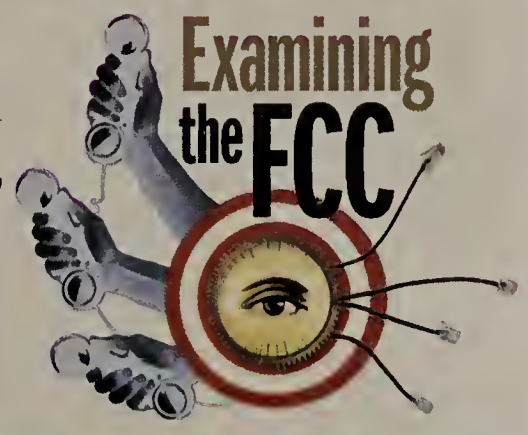

RANDEE LADDEN

REVIEW: *PalmSun's KeepCool provides affordable Windows desktop management with Web-based software distribution.* Page 55.

SPECIAL FOCUS

Directory services

Meta directory market crawls along. Page 25.

FIND IT ON FUSION

To quickly get to any online info referenced in *Network World*, enter its DocFinder number in the input box on the home page.

NetworkWorld Fusion

www.nwfusion.com

This Week

Only on Fusion

Keeping Current. So maybe Gigabit Ethernet does have some distance limits over fiber. "So what?" Fred McClimans says. Most people will likely use it to connect servers — or service a single building — where a 200-meter limit is more than adequate. **DocFinder: 4850**

Discussion. Plus, readers have set up a discussion on Gigabit Ethernet vs. ATM. Jump in! **DocFinder: 4851**

Question of the week. A user has 50 Windows 95 clients connecting to an Exchange server via NetWare clients.

Everything was fine until he added the Microsoft network client for authentication purposes. Now networked applications run very slowly, and only reformatting the hard drive and installing just one network client fixes things.

Is there an easier solution? **DocFinder: 4848**

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News briefs, November 24, 1997

COMDEX

The world of Comdex/Fall '97

There was the usual plethora of announcements last week at the big show. Here are some of the biggest:

IBM's *Netfinity servers to go eight-way.*

■ **IBM** revealed plans to proceed with an eight-way Intel Pentium II-based server for its Netfinity line. IBM did not reveal when the machine will be available.

■ **Computer Associates International, Inc.** unveiled additional services for its Unicenter TNG systems management software, which the company claimed will ease desktop management. The services — which in the future will be bundled into Unicenter TNG at no extra cost — will let customers remotely manage desktop PCs or NetPCs, even if the devices are turned off, using CA's WakePC technology. Companies also will be able to specify policy-based system configuration and installation.

■ As expected, **AT&T** officially announced its AT&T WorldNet virtual private network (VPN) service (*NW*, Nov. 3, page 1). The service will offer users an end-to-end 99.7% network availability guarantee. WorldNet VPN service will let business users interconnect their intranets and extranets over AT&T's Internet backbone. While the service is available now, security features such as Remote Authentication Dial-In Service, managed firewalls and tunneling will not be available until early 1998. The monthly rates range from $103 for 16K bit/sec to $2,366 for a 1,024K bit/sec managed connection.

■ **Adaptec Corp.** said it plans to work with Loral Space and Communications, Ltd.'s CyberStar satellite communication services subsidiary to develop and market PC-to-satellite hardware that will allow computers to receive data from satellite dish antennas. The first product to appear out of the agreement is a satellite-to-PC receiver adapter card from Adaptec called the Satellite Express ABA-1040, which will let PCs receive Internet content and other forms of data from CyberStar's network of three geostationary satellites. CyberStar will market the adapter card to businesses and consumers that want high-speed LAN interconnection, intranet multicasting, real-time streaming and high-speed Internet access. The company will begin offering the products in mid-1998.

■ **CompuServe, Inc.** previewed its new Web site, "C from CompuServe," due to be launched by year-end. CompuServe announced that C will provide free read-only access to some 600 forums and the ability to do online transactions such as ordering books via any industry browser. In addition, a variety of premium services, such as e-mail, will be offered to members who pay a fee of less than $10 per month. CompuServe this week also gave in to a "Usenet death penalty" and pledged it will do more to stop spammers from bombarding Usenet from its network. Two days after a group of Usenet users began canceling all Usenet postings with compuserve.com addresses, the company said it would post an acceptable use policy that bans spam, according to Rick Buchanan, a systems engineer and cancelbot operator who issued the death penalty.

■ **Aladdin Knowledge Systems, Ltd.** previewed a software suite designed to combine license management, electronic software distribution and software security in one package. The company's Privilege licensing software will help developers keep track of their licensing arrangements and automatically lets customers monitor user software deployment. On the software distribution side, Privilege will give users the ability to upgrade software and order new licenses without having to go through time-consuming, traditional sales channels. The package will ship in the first quarter of 1998. Pricing has not been set.

SAP meets frame relay at AT&T

By David Rohde
Atlanta

AT&T is gearing up to help users solve one of the most nettling issues in deploying large application packages: determining the appropriate type and size of the WAN links needed to support them.

Without fanfare, the carrier is deploying an applications-modeling system that spits out an optimized WAN design to support SAP America, Inc.'s SAP R/3 and competing application suites from PeopleSoft, Inc., Baan Co. and Oracle Corp.

AT&T Labs developed the tool, Version 4 of the Global Interactive Network Optimization System (G-INOS), to match frame relay topologies with the traffic generated by SAP applications. Built on top of Microsoft Corp.'s Excel spreadsheet, G-INOS is employed by about two dozen AT&T Data Network Analysts (DNA) in the U.S.

For a prospective frame relay customer, the DNA feeds G-INOS with the number of SAP users, and the amount and type of traffic each is expected to generate. Via AT&T's own intranet, G-INOS then accesses a database server in New Jersey containing information, such as rates for private-line and fast-packet data services.

One reason AT&T is doing this kind of applications modeling is not all SAP traffic needs the same protection against network delay, said Tom Siracusa, general manager of AT&T's Data Network Design and Performance Analysis Group.

For example, users generally demand low latency for interactive sessions with a database server, especially for ordering and inventory applications. By contrast, print jobs and report downloads can afford to take longer.

Understanding ahead of time the amount and type of traffic generated helps determine the network design. As a result, latency-sensitive traffic can get higher committed information rates or separate virtual circuits, and additional WAN hubs in a multiple-star configuration. The same modeling process also avoids money-wasting overprovisioning of ports and circuits, Siracusa said.

Calling on an AT&T DNA to employ G-INOS requires more than just a snap of the fingers. DNAs are located deep within AT&T's thick bureaucracy, two levels removed from the company's data network salespeople (see graphic).

Those data sales representatives can use G-INOS for WAN designs of 20 sites or less. But for bigger and more complicated projects, users are referred to specialized Data Network Consultants (DNC) and further referred to even more specialized DNAs.

Once the design is complete, users have to return to the account executive if they want to negotiate off-tariff prices. "We don't do the pricing," Siracusa said. ■

WHO YA GONNA CALL?

Decoding the AT&T lingo for its Data Technical Marketing organization:

DNAE	DNC	DNA
Data Network Account Executives are salespeople around the country. They refer presale WAN design questions to...	Data Network Consultants who help draw up WAN designs and are located in AT&T branch offices. For in-depth applications modeling, they refer to...	Data Network Analysts clustered in six Regional Solutions Centers in Boston, New York, Chicago, San Francisco, Atlanta and Los Angeles.

Bay to enter ATM access market

Private-label versions of Yurie muxes coming next week.

By Jim Duffy
Billerica, Mass.

Bay Networks, Inc. next week will enter the ATM access fray by unveiling two multiplexers borne of its five-week-old relationship with Yurie Systems, Inc.

Bay will offer private-label versions of Yurie's LDR200 and LDR50 access muxes. The muxes concentrate ATM, LAN, frame relay, voice and video traffic on an ATM trunk for access to a service provider's ATM, circuit-switched or frame relay network.

Yurie confirmed that Bay is private-labeling the LDR200 and LDR50. Bay declined comment.

The LDR200 is targeted at service providers, and corporate and government end users. It features 12- and 16-slot chassis for T-1, T-3, OC-3, serial and Ethernet interface cards.

The LDR50 is designed for corporate and large regional business offices. It furnishes 600M bit/sec of total throughput, features four user slots and scales up to 32 ports.

Bay *will be selling private-label versions of Yurie Systems muxes.*

The LDR200 costs from $30,000 to $90,000, while the LDR50 costs from $20,000 to $40,000. Bay also is expected next week to roll out enhancements to its Centillion and System 5000 switches to fill out its ATM access road map.

In partnering with Yurie, Bay chose the leader in worldwide ATM access, according to Vertical Systems Group, in Dedham, Mass. Yurie has a 28% share of the $122 million market in 1997, outdistancing runner-up 3Com Corp.'s 12% share, Vertical said.

The market will grow to $647 million by 2000, a compound annual growth rate of 84%, Vertical said.

"Access is the fastest growing segment of the ATM market," said Rick Malone, principal at Vertical. "This is a logical step for Bay, and it fills a product void."

In addition to 3Com, Bay's competition in ATM access will come from Cisco Systems, Inc. The Bay-Yurie offerings will go up against the Cisco 3800 and 3810, the latter which was obtained from Cisco's acquisition of Ardent Communications Corp. (*NW*, June 30, page 12).

Analysts believe that the Cisco 3810, expected to ship early next year, will succeed the 3800 line. Indeed, Cisco expects demand to shift to the 3810, which features a peppier processor, said Peter Alexander, director of marketing in Cisco's Multiservice Access business unit. ■

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Telecom reform, 'Net fuel venture funding

By Chris Nerney

Network start-ups fueled a record amount of venture capital in-vestments during the third quarter, according to an exclusive Price Waterhouse/*Network World* survey.

Driving high-tech investment activity are start-ups attempting to exploit markets opened up by telecom reform, Internet companies receiving later-stage funding and all manner of wireless product and server vendors.

Total investments in all start-ups in this year's third quarter reached $3.57 billion, topping the previous high of $3.18 billion, reported in the second quarter, according to the Price Waterhouse Venture Capital Survey released last Thursday.

Of the 675 companies receiving venture funding in the third quarter, 168 reported a network technology element in their business.

Those firms were given $933 million in funding, about 41% of the $2.25 billion total invested in high-tech firms.

Among the types of companies drawing the most interest from investors in the third quarter were wireless communication vendors, high-speed switch and router providers (YAGO Systems, Inc. grabbed $4.9 million and Foundry Networks, Inc. bagged $9 million) and remote access upstarts (RAScom, Inc. snagged $10 million and New Oak Communications, Inc. is $7.5 million richer).

Also hot were Internet access and software start-ups, such as Sitara Networks, Inc., which received $7 million in second-round funding to help deliver its software for speeding Web site access. Other emerging Internet markets include electronic commerce products and software for bringing legacy applications to the 'Net.

Investments in communications companies, including firms that sell hardware such as switches and routers or provide services such as remote access and local phone service, topped software investments last quarter

See Venture, *page 14*

WHERE THE MONEY IS

A sampling of network companies that received venture funding during Q3 1997

Vendor	Nature of business	Amount raised	Investor(s)
Alacritech San Jose, Calif.	Network products, including computer components for moving data from the network to disk drives	$3.2 million	Benchmark Capital, Institutional Venture Partners
Allegiance Telecom Dallas	Competitive local exchange carrier	$19 million	Battery Ventures, Frontenac, Madison Dearborn Partners, Morgan Stanley Venture Partners
Amplitude Software San Francisco	Web applications, including resource scheduling and event publishing	$1 million	Menlo Ventures
Assured Access Milpitas, Calif.	Internet access equipment	$13 million	Mayfield Fund, Sequoia Capital and others
Berkeley Networks San Jose, Calif.	Switching products for enterprise backbones	$8.825 million	Advanced Technology Ventures, Information Technology Ventures, Intel, New Enterprise Associates, Vantage Point Partners
Beyond Software San Jose, Calif.	Mainframe-to-Web connectivity products	$375,000	Aspen Ventures
BlazeNet Natick, Mass.	LAN/WAN internetwork switches	$2.5 million	Egan Managed Capital, Hambrecht & Quist Venture Capital, TI Ventures
Brocade Communications Systems San Jose, Calif.	Gigabit switching fiber channel products	$16.2 million	Norwest Venture Capital, Weiss Peck & Greer Venture Partners
CKS Limited Pittsburgh	Secure single sign-on products	$6.173 million	ABS Ventures, HarbourVest Partners
Cobalt Microserver Mountain View, Calif.	Network server appliances	$2.5 million	Chase Capital Partners, Technology Funding Venture Partners, Vanguard Venture Partners
Covad Communications Santa Clara, Calif.	Competitive local exchange carrier	$8.5 million	Crosspoint Venture Partners, Intel, Warburg Pincus Ventures
Crossroads Systems Austin, Texas	Storage-area network products	$5.3 million	ADIC, Austin Ventures and others
Ensemble Solutions Santa Clara, Calif.	Real-time transaction software for electronic commerce	$1 million	Advanced Technology Ventures, Applied Technology
Finjan Software Santa Clara, Calif.	Security software for Java and ActiveX programs	$9.85 million	Apex Investment Partners, Bessemer Venture Partners, CSK Ventures, Comdisco Venture Group, The Productivity Fund I & II
Foundry Networks Sunnyvale, Calif.	Ethernet switching routers for workgroup and enterprise networks	$9 million	Accel Partners, Institutional Venture Partners
Juniper Networks Mountain View, Calif.	High-end routers for Internet service providers	$50 million	3Com, AT&T Ventures, Crosspoint Venture Partners, Newbridge
Kana Palo Alto, Calif.	E-mail-based customer service software for the Internet	$4 million	Benchmark Capital, Draper Fisher Jurvetson, Draper Richards and others
Main Control Vienna, Va.	Enterprise network management software	$10 million	Charles River Ventures, Gibraltar Trust, JAFCO America Ventures, OneLiberty Ventures, Sevin Rosen Funds, Star Ventures
Marimba Palo Alto, Calif.	Java-based Internet and intranet software	$14.5 million	Kleiner Perkins Caufield & Byers
Multipoint Networks Belmont, Calif.	Radio-area networks for digital transmission of traffic at fractional T-1 rates	$1.5 million	Advent International, Alta Partners/Burr Egan Deleage & Co., Draper Fisher Jurvetson, HMS Group
NetBoost Palo Alto, Calif.	Hardware platform for embedded network applications	$4.6 million	Bay Partners, Crosspoint Venture Partners, Hambrecht & Quist Venture Capital, TI Ventures
Net.Genesis Cambridge, Mass.	Web analysis and tracking tools	$1.5 million	Bessemer Venture Partners, Charles River Ventures and others
NeTpower Sunnyvale, Calif.	Specialized Windows NT workstations and servers for visual computing applications	$22 million	Asset Management, Institutional Venture Partners, Morgenthaler Ventures, New Enterprise Associates, Weston Presidio Offshore Capital
New Oak Communications Acton, Mass.	Network switch that allows secure remote access using the 'Net	$7.5 million	Highland Capital Partners, North Bridge Venture Partners, Venrock Associates
NextPoint Networks Westford, Mass.	Network management software	$3 million	Polaris Venture Partners
Omnia Communications Marlborough, Mass.	SONET access	$100,000	Bessemer Venture Partners, Charles River Ventures
Packeteer Campbell, Calif.	Internet traffic and bandwidth management products	$433,000	Enterprise Partners, Onset Ventures, Sterling Payot Capital
Pluris Palo Alto, Calif.	Internet backbone routers	$3.235 million	Communications Ventures, Weiss Peck & Greer Venture Partners and others
Ramp Networks Santa Clara, Calif.	Fast Internet access devices for small companies	$3.25 million	CPQ Holding, Charter Venture Capital
RAScom Salem, N.H.	Remote access communication servers	$10 million	Charles River Ventures, HarbourVest Partners, Pioneer Capital, Star Ventures and others
Simpact San Diego, Calif.	Data communication servers	$750,000	Dominion Ventures and others
Sitara Networks Waltham, Mass.	Software for speeding Web access	$7 million	Charles River Ventures, Media Communications Partners, New Enterprise Associates, OneLiberty Ventures, Prism Partners
Torrent Networking Technologies Silver Spring, Md.	High-speed IP switching routers for corporate and carrier nets	$3 million	Columbia Capital, Draper International India
VIA Internet Denver	International Internet service provider	$1.025 million	Centennial Fund, Norwest Venture Capital, Telecom Partners
VStream Boulder, Colo.	Multimedia on-demand Internet business services	$1 million	Centennial Fund
Whistle Communications Foster City, Calif.	Plug-and-play Internet servers	$20.5 million	Deutsche Morgan Grenfell, Institutional Venture Partners, Mayfield Fund, Merrill Lynch Venture Partners and others
XCOM Technologies Cambridge, Mass.	Competitive local exchange carrier	$4 million	Battery Ventures, Matrix Partners
YAGO Systems Sunnyvale, Calif.	Wire-speed Layer 4 switching routers	$4.9 million	Cabletron, Sequoia Capital

SOURCE: PRICE WATERHOUSE, BETHESDA, MD.

For a complete listing of companies, visit Network World Fusion www.nwfusion.com. DocFinder 4852.

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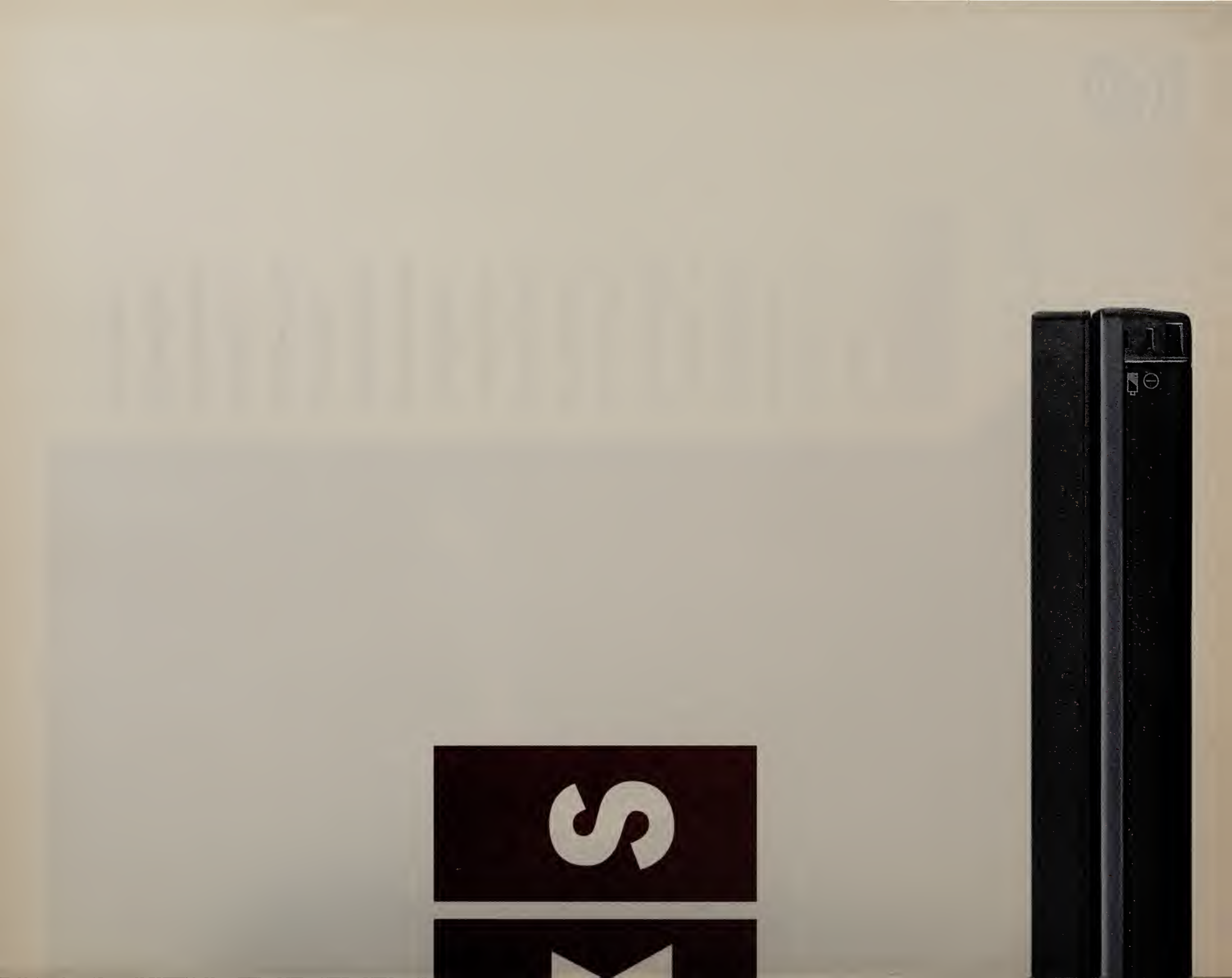

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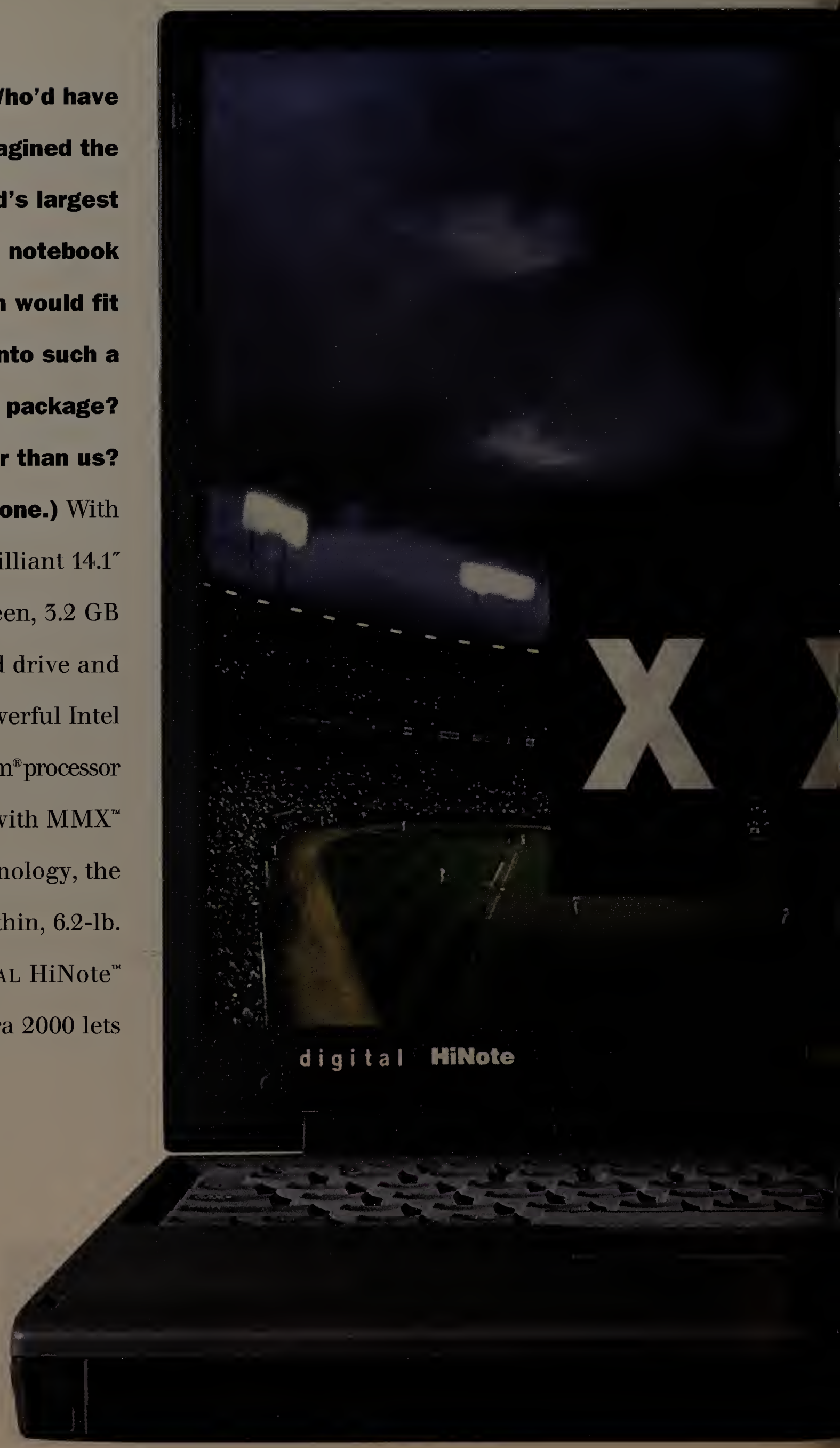

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Novell welcomes back good ol' NetWare

By Christine Burns
Las Vegas

Novell, Inc. is going back to basics. Basic NetWare, that is.

When the company ships the next version of its operating system in mid-1998, the red box will read plain old "NetWare 5.0," said Novell CEO Eric Schmidt last week during his Comdex/Fall '97 address here.

Novell is returning to the flagship name because the 18-month-old IntranetWare brand name has done its job by winning the company recognition as an Internet and intranet player, Novell officials said.

A recent survey by market research firm International Data Corp. has Novell tied with Netscape Communications Corp. for third place among Internet and intranet firms. Novell failed to rank as even one of the top 10 Internet or intranet companies before it began packaging its operating system as "IntranetWare" and bundling it with Web wares such as Netscape Communications Corp.'s Navigator Web browser, the Novell Web Server, File Transfer Protocol software and an IP-to-IPX gateway.

In addition to revealing the return to NetWare, Schmidt said the company is on track to announce new and updated products at the rate of one per month starting in December.

NetWare 5.0 — code-named Moab — is expected to include elevated server-side Java and native TCP/IP support. The software entered its first public beta cycle last week, and Schmidt said there will be two more beta releases before it ships.


Novell's *Schmidt*

NetWare 5.0 will include most of the Internet add-ons currently found in IntranetWare, except for the Novell Web Server. Novell has decided to abandon any further development on its own Web server. Instead, the company will bundle NetWare 5.0 with the Web server developed by subsidiary Novonyx, Inc.

Novonyx is a joint venture formed last spring between Netscape and Novell for the purpose of porting Netscape's Internet servers to IntranetWare.

Until Schmidt's announcement last week, Novell was adamant that it would pursue development of its own Web server, despite widespread user support for the Novonyx product (*NW*, Nov. 3, page 1).

Novell will continue to support existing customers who run both IntranetWare and Novell Web Server.

IDG news service correspondents Rob Guth and Rebecca Sykes contributed to this article.

Netscape boosts its toolbox

Full-featured development package due out by year-end.

By Andy Eddy
Las Vegas

Netscape Communications Corp. last week used Comdex/Fall '97 to announce a new set of development tools, bolstering the company's strategy to supply more than just Web browsers and servers.

Dubbed Netscape SuiteTools 2.0, this toolbox of programming elements enables developers to rapidly build Internet, intranet and extranet applications. While Version 1.0 offered a collection of third-party tools, this release adds new homegrown Netscape software.

The new package also continues support for JavaBeans, small software modules that developers can link together with JavaScript to make a larger, custom application.

One new SuiteTools component is Netscape Visual JavaScript Pro 1.0, which features the ability to drag and drop JavaBeans elements on Web pages. This expedites the process of creating complex applications capable of accessing databases from vendors such as Oracle Corp., Informix Software, Inc., Sybase, Inc. and others.

Also included with Netscape Visual JavaScript Pro 1.0 is a single-user version of Netscape Enterprise Server 3.0, Netscape JavaScript Debugger and a personal SQL database, as well as extensive documentation and examples. Combined, the elements help a developer test applications prior to publishing them on a Web site.

Netscape Component Builder 1.0 is the other new offering. It enables IT personnel to create Java, JavaScript and Common Object Request Broker Architecture components. Included is Symantec Corp.'s Visual Cafe 2.0 Professional Developer Edition, Netscape Component Developer Kit and programming samples that demonstrate what components can be created.

Netscape plans for SuiteTools 2.0 to be available by year-end at $995 per developer seat. Netscape Visual JavaScript Pro 1.0, Netscape Visual JavaScript and Netscape Component Builder 1.0 may be purchased separately around the same time for $795, $495 and $295, respectively, per developer seat.

✆ Netscape: (650) 254-1900

Venture

Continued from page 8

for the first time, $797 million to $794 million. Usually, "communications is about 20% below software," said Kirk Walden, Price Waterhouse Venture Capital Survey director.

"Start-ups spawned by telecom reform clearly are driving the communications category as a whole," he said.

The main reason for the rush of activity in telecommunications is the market created by the 1996 federal law forcing local carriers to allow competition.

"Telecom reform opened up a $100 billion market that before was totally monopolized," said Todd Dagres, a partner at Battery Ventures, a venture capital firm in Wellesley, Mass. "Twenty percent of that market will go to competitive local exchange carriers. That's $20 billion over the next five years."

Battery Ventures invested in two local exchange start-ups in the third quarter — XCOM Technologies, Inc. of Cambridge, Mass. and Allegiance Telecom, Inc. of Dallas.

These phone networks are largely aimed at carrying Internet and corporate data traffic, Dagres said. "That's why second lines are being added, and why higher performance access is required, and why bigger backbones are needed," he said.

Telecom companies also attracted some of the largest venture investments in the third quarter because of the high costs of gaining a foothold in that sector.

"Some of the telecom start-ups, such as fiber-optic companies, require a chunk of money," Walden said. "You're not talking about a $5 million seed investment like you'd see with a software start-up."

For example, Formus Communications, Inc., of Englewood, Colo., a developer of broadband wireless systems, received $30 million in first-round funding from four different venture firms. And Allegiance Telecom was given $19 million in second-round capital from Battery Ventures and three other partners.

In contrast, early-stage start-ups overall averaged $4 million each. ■

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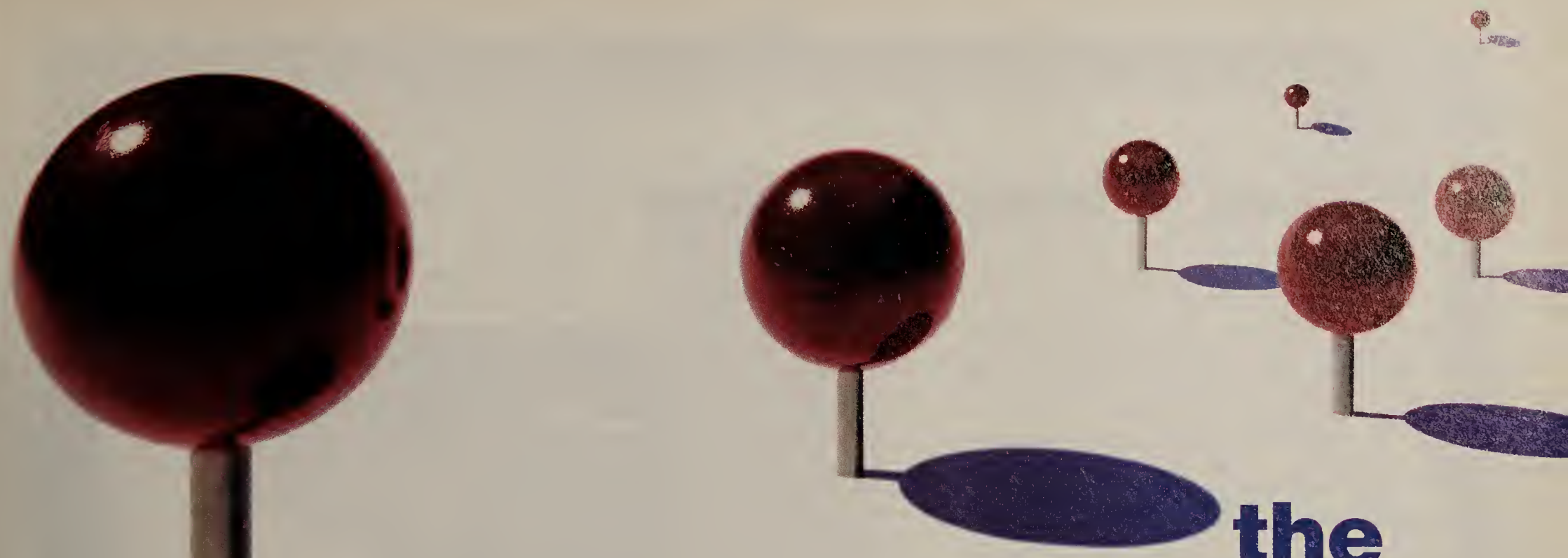

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COMDEX

The Windows PC honeymoon is over

By John Cox
Las Vegas

As Microsoft Corp. Chairman Bill Gates made the Comdex/Fall '97 kickoff speech last week, some of his employees passed out "I love PCs" T-shirts to attendees. But customers checking out Microsoft's new Windows terminal software made it clear the honeymoon is over.

In a small booth in its sprawling display space, Microsoft demonstrated Windows-based Terminal (WBT) Server, formerly known as Hydra. WBT Server is software that lets Windows NT Server 4.0 handle multiple users at the same time. Instead of putting big, fat, expensive PCs on each desktop, customers can use thin, relatively simple and cheap terminals that access 32-bit Windows applications running on WBT Server.

WBT is being released into tests at 1,000 customer sites. A second beta test with more customers will start in the first quarter of 1998. Microsoft said WBT will be generally available no later than June 1998.

Gates told listeners that the Windows-based Terminal approach was "just another way to access Windows applications." But at least some of the listeners believe WBT could change the nature of desktop computing.

"Bill Gates was saying people love their PCs. But people in our company just want to get their jobs done," said Scott Lien, information technology systems manager with Fastenal Co. of Winona, Minn.

For the past 18 months, Lien gradually has been replacing text terminals with Windows terminals that connect to Citrix Systems, Inc.'s WinFrame multiuser NT server. Now Fastenal PC users are coming to Lien and asking him to replace their PCs with terminals. "The WinFrame users just don't have problems," Lien said.

Users at Comdex *crowd around for a look at Microsoft's thin-client server, formerly named Hydra.*

WBT also appeals to companies facing almost crippling costs in moving from Intel 386 and 486 PCs running 16-bit Windows to Pentium PCs that can run the 32-bit Windows 95 and NT.

Others are just fed up with having to continually buy new hardware. "Upgrading our hardware all the time is getting to be a killer," said Lt. Col. James Haas, deputy director of the U.S. Air Force's Operational Test and Evaluation Center, in Albuquerque, N.M.

A year ago, the center began upgrading about 1,000 aging Intel 486-based PCs by buying, for about $100, a more powerful, Intel-compatible chip, the Evergreen 586 P75. The planned next step was to buy new Intel Pentium-based systems, Haas said. "But after seeing this [WBT Server demonstration], I'd love

See **PC,** *page 20*

The show people love to hate

COMDEX

By Paul McNamara
Las Vegas

Is Comdex still worth the price of admission?

Big-name vendors spend millions to out-strut one another, smaller companies cough up six figures to be seen as Las Vegas players, and 200,000-plus individuals gouge their expense accounts for the privilege of braving the legendary Comdex chaos.

Most vendors believe they are getting their money's worth, based on interviews at Comdex/Fall '97 here last week. But the conspicuous absence of companies such as Compaq Computer Corp., Netscape Communications Corp., Oracle Corp. and Sun Microsystems, Inc. from the show floor, coupled with disparaging words from industry watchers and veteran attendees, raised questions about the show's future.

Numbers alone seem to indicate that Comdex is as healthy as Microsoft Corp.'s bottom line. Although no final count was available, show registrations were up 7% to 10% above last year's attendance of 215,000, while exhibitors numbered 2,300, up 200 over 1996.

Everyone said the show felt more crowded, but that growth may be double-edged. While most vendors seemed pleased with the traffic at their booths, others griped about the number of tire-kickers and T-shirt hounds. Attendees complained about not getting answers to their technical questions.

Comdex show director William Sell insisted there has been no qualitative drop-off in the audience.

"If it was the case that the audience was weak and that [Comdex] wasn't working, you wouldn't be seeing the growth and the larger [exhibit] spaces and the massive commitment these companies make," he said.

Nevertheless, Comdex is feeling the heat from Internet-specific shows like next month's Fall Internet World '97 in New York. In addition, companies said they would rather concentrate resources on their own user conferences, and, increasingly, the Web itself.

"We decided we could get more bang for our buck by doing our own show," said John Sweney, manager of public relations at Compaq. "We can get our message through to our customers without a lot of extra noise."

That would have been unlikely within the crush last week. There was a constant din at the Microsoft pavilion, in particular, as people crowded armpit to armpit in front of some 300 Microsoft partner stations.

"You couldn't even move," said Stephen Pope, president of Dimensions Computer Automation of Ontario, Canada. "There were things I would have liked to have seen, but couldn't get to."

Darrell Courtley, manager of emerging technology research at The Prudential in Roseland, N.J., said "an important part of any trade show is stumbling across the smaller player who I might not come across otherwise, and that's where the size of this thing gets in the way."

The bottom line for vendors and attendees is that skipping Comdex is now at least an option.

"How many are thinking about it versus how many are actually acting on that?" countered show director Sell. "There are very, very few companies who are completely ignoring [Comdex]." ■

REPORTER'S NOTEBOOK: From Santa to a warm and fuzzy Bill Gates

All in good taste

Booth bunnies can only do so much, which means Comdex/Fall '97 exhibitors were tripping over each other – and good taste – to get attention. A few of last week's coolest and lamest ploys:

Cool: Motorola Raceway – virtual thrills, no compound fractures.

Lame: Intel Corp.'s Trivia Challenge – although a daring carnival barker did poke fun at Andy Grove's book.

Cool: Fujitsu, Ltd.'s Santa's workshop . . . OK, so we're sucking up.

Lame: Adaptec, Inc.'s faux Village People – tacky, even in Vegas.

Cool: Novell, Inc.'s Porsche giveaway – accept no substitute.

Lamest of all: Iomega Corp.'s getwiththeclik! clicker distribution, which left Comdex sounding like a cricket convention.

Santa and Novell's Porsche were cool.

Porno for geeks

Comdex was not the only show in town featuring the latest in video and Internet technology. AdultDex '97 (that's code for smut) drew its fair share of IT types too, according to sources who quickly covered up their Comdex badges.

Kinder, gentler CEOs

Microsoft Chairman and CEO Bill Gates went to great lengths – including what must have been a painful self-parody – to project a warmer, funnier persona during his keynote. Alas, he was upstaged by a member of an organization not renowned for generating giggles – the Marine Corps. Maj. Jim Cummiskey, who was helping Gates demonstrate a handheld Windows CE-based device, drew belly laughs when he explained the critical nature of wireless communi-cations during wartime: You don't go into attack with coax cable hanging out your rear end, he said.

Get with the program

A marketing guy for IBM's voice-recognition product line showed he could recognize a rip-off. Witness his banter with a cabbie just outside Circus Circus hotel:

IBMer: I noticed the total hit $6 before we even left the parking lot.

Cabbie: That's Comdex.

IBMer: The meter doesn't count?

Cabbie: Not at Comdex.

Shiny, happy Comdex-goers.

Standing room only

Twelve thousand people showed up to hear Gates speak in a hall that holds only 10,000. Some of the furious 2,000 who were turned away had lynch-mob potential, said one show organizer.

Bill Gates: Featured attraction.

Media throng

At roughly 3,300 strong, the media contingent was surpassed in size only by the throng that covers the Olympics. That gave the average showgoer about a 1 in 70 chance of having a notebook or microphone waved in his face. . . . Yet they still come.

– Paul McNamara

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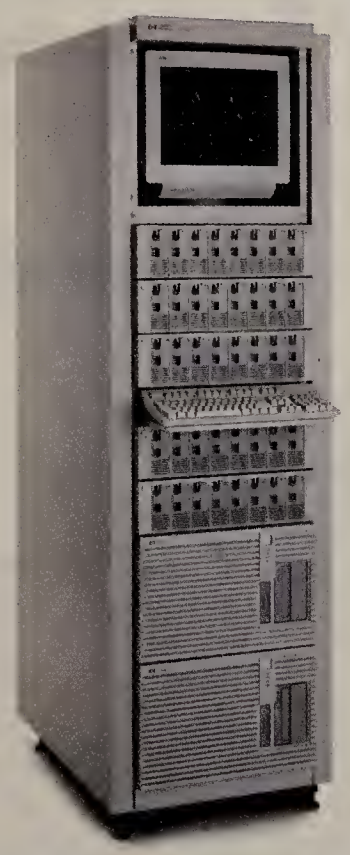

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UUNET

Continued from page 1

company's current needs or budget. "Our costs are higher because we've had to deploy ISDN or dedicated T-1s where we would have opted for DSL," said Sim Wright, coordinator of information technology at the Spartanburg, S.C. company. "DSL would provide cost savings and increased bandwidth."

Users like BMW will be waiting even longer if local exchange carriers (LEC) such as SBC Communications, Inc. continue to make it difficult to offer DSL.

SBC recently declared it will not let any of its unbundled local loop lines to be used to support asymmetric DSL (ADSL) services, a company spokesman said. This would apply to any CLEC or ISP. UUNET, however, is offering a different flavor of DSL. UUNET's Preferred Access 128 service is based on Ascend Communications, Inc. IDSL equipment. IDSL creates a dedicated 128K bit/sec connection over copper wiring to UUNET's Internet backbone.

SLOW GOING

UUNET's Preferred Access 128 IDSL service today is available in a handful of metropolitan areas. But the service's national reach is lagging.

SBC will not allow any service providers to offer ADSL services on its local loop in its territories or in Pacific Bell's territories until a "regular tariff" is established, the spokesman said. Pacific Bell is a subsidiary of SBC. Today, SBC has filed an "experimental tariff" with state public utility commissions, the spokesman said.

DSL rollouts must wait for LECs to unbundle their networks and upgrade their switches and facilities where necessary, said Eric Paulak, senior analyst at Gartner Group, Inc., a Stamford, Conn. consulting firm.

To the LECs, unbundling their networks is both a "blessing and a curse," Paulak said. Competitive LECs (CLEC) are new customers, but they are also competitors, he explained. And only a CLEC can buy unbundled local loop service and set up colocation within an LEC's central office.

Meanwhile UUNET is using all of MFS' existing interconnection and colocation arrangements to offer its Preferred Access 128 service. MFS is a CLEC and, like UUNET, a subsidiary of WorldCom, Inc. While UUNET should have had service in the majority of the country by now, the fact is no other national ISP is even attempting national DSL support. UUNET expects Preferred Access to be available in 117 cities by mid-1998. ■

PC

Continued from page 16

to test these terminals with a couple of our clients," he said.

However, the bandwidth demands of future graphics-oriented applications might pose a problem. "For this approach to run correctly, I think you need to look at the long term and invest in the infrastructure," he said.

But WBT Server's performance was a pleasant surprise for Roger Mendoza, senior software engineer with TRW, Inc.'s Systems Integration Group, in Redondo Beach, Calif.

"It's fast enough for most applications," he said. Microsoft ran WBT Server on a computer with an Intel Pentium 166-MHz processor.

The potential for Windows-based terminals to simplify desktop management is a big attraction for William Ogilvie, network administrator for the U.S. Department of Veterans Affairs in Temple, Texas.

Four VA hospitals, with about 2,100 PCs, are joined on a network. "It's a management and support nightmare right now," Ogilvie said. By moving applications to a group of NT servers and remotely managing them, Ogilvie thinks the nightmare might become dreamlike.

At least six terminal vendors exhibited prototype Windows-based terminals at Comdex. Only two, from Network Computing Devices, Inc. and Boundless Technologies, Inc., were running Window CE 2.0, which is Microsoft's compact, Windows-compatible operating system, a version of which will eventually be WBT's client software.

The other vendors used their own software, which will be replaced by Windows CE. ■

Wyse

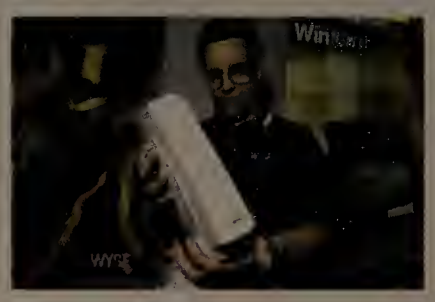
Continued from page 1

lined Java Virtual Machine, need less memory and be able to connect to a wider range of Unix and NT servers than today's NCs, McNaught claimed. Using optional software, the device also will be able to run Windows applications from the server.

Ironically, the server-oriented Winterm 4010 will boot from local code instead of from a server, which McNaught said has proven to be too slow.

Wyse may not be going completely against the NC grain, as there is still no formal, authoritative NC definition.

In fact, a range of Java devices is possible, according to Randy Brasche, marketing manager for Network Computer, Inc., a subsidiary of Oracle Corp.



Wyse's Jeff McNaught *showed off the new Winterm 4010, a "Java network terminal" at Comdex last week.*

Wyse is remaining true to its roots as a terminal manufacturer by creating a Java device that will access existing server applications, Brasche said. "I'm not saying this approach is bad," he said. "In the short term, it provides great capabilities."

But the problem is products such as Microsoft Office were not designed as fully distributed applications, he added. "Distributed applications are the long-term direction," he said. "For this, you need to provide the full Java functionality for Java applications on the desktop."

Customers evaluating Wyse's now canceled Winterm 4000, identified several NC problems, Wyse claimed. Large-scale Java applets running locally were not viable. In addition, users wanted to access Windows applications more than they wanted to replace them.

Finally, the NC had to be affordable, Wyse customers said.

The Winterm 4010 terminal will address all these issues. It will run with between 8M and 16M bytes of RAM, use the StrongARM microprocessor and sell for less than $1,000. ■

Big local carriers market DSL

So far, they are just dipping their toes in the water.

By Tim Greene

In the coming months, select users can expect local phone company big boys to flood them with a river of new digital subscriber line (DSL) services.

And the first trickles already are appearing. Last week, major local carriers SBC Communications, Inc., Pacific Bell and GTE Corp. all announced limited deployment of DSL, closely following a similar US WEST, Inc. announcement (*NW*, Oct. 27, page 10). Other major local carriers, such as Ameritech Corp., Bell Atlantic Corp. and BellSouth Corp., plan rollouts by year-end or early 1998. In addition, a host of competitive local exchange carriers (CLEC), startups specializing in DSL, soon will add stiff competition that could help drive down prices (*NW*, Oct. 27, page 1).

The SBC, Pacific Bell and GTE offerings are limited geographically, and none has the full bandwidth potential of DSL, which can reach 8M bit/sec for downloads and up to 640K bit/sec for uploads over regular phone lines.

For users, the flurry of activity means increased options to gain broadband access to the Internet and corporate networks.

Users also hope competition will result in lower prices, according to Alan Wallace, chairman of InterActive Agency, Inc., an online marketing and public relations firm in Santa Monica, Calif. Wallace has the GTE service at his home and said he also would get it for his office if it were available and the price were right. "I'm looking to see when bandwidth is going to start costing me less," he said. Wallace is replacing an ISDN line at his home with a DSL line, giving him higher bandwidth and eliminating per-minute charges.

The GTE service, called ADSL OnSite, adds a unique twist. Rather than running the service over phone wires strung on utility poles, GTE will offer ADSL OnSite only in business and residential high-rise buildings.

By doing that, GTE can avoid the costly chore of making sure each potential DSL phone line is free of load coils and bridge taps that can disrupt DSL, and that it is short enough to fall within DSL distance limitations.

Currently, ADSL OnSite is available only in a 1,000-resident apartment complex in Marina Del Ray, Calif. But GTE plans to team up with owners of corporate high-rises to expand its services, according to Flynn Nogueira, director of data services for GTE Communications.

SBC and Pacific Bell, which is owned by SBC, are taking cautious first steps to offer their DSL service, FasTrak DSL, over regular phone lines in San Francisco and Austin, Texas. They limit the offering to customers within three miles of a switching office equipped with DSL gear.

Users have to pick up the tab for the customer-end modem and network interface card, which cost an estimated total of $440 and $660. ■

Prices of DSL services offered by major local carriers

Carrier	Download speeds (bit/sec)			Monthly fee		
GTE	680K	1.5M		$125	$700	
PacBell*	384K	1.5M		$135	$250	
SBC*	384K	1.5M		$150	$250	
US WEST	192K	320K	704K	$40	$65	$125

Note: Prices are for remote users only. Broadband central site DSL feeds cost extra.

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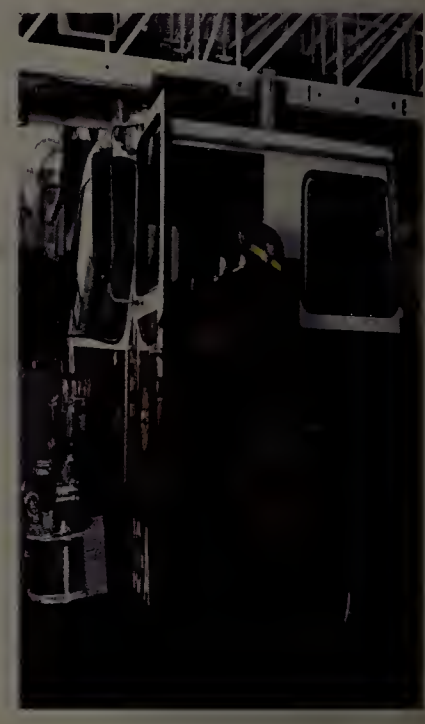

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Briefs

■ **Extreme Networks, Inc.** *last week unveiled an eight-port device that allows users to stack the company's* **Gigabit Ethernet** *switches eight high.*

Extreme's *Summit Virtual Chassis*

Called Summit Virtual Chassis, the device allows users to configure Ethernet switches to support up to 32 Gigabit Ethernet ports or 128 10M/100M bit/sec ports. It also forwards 48 million packet/sec, Extreme said.

The Summit Virtual chassis costs $8,995 and is available now.

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■ **Mission Critical Software, Inc.** *has begun beta-testing its Domain Consolidation Toolkit, which helps users* **manage Windows NT domains.** *The tools allow administrators to restructure NT domains by moving user accounts, recreating global and local group memberships and adjusting access control lists.*

© Mission Critical: (888) 323-6768

■ **Intel Corp.** *will beat Cabletron Systems, Inc. to market with its line of* **Ethernet/Fast Ethernet Desktop Switches** *when the Intel Express 510T ships Dec. 1 at a very competitive $199 per port. Cabletron's SmartSTACK Fast Ethernet Switch (ELS100-16TX) with 16 ports will cost $243 per port when it ships two months later.*

The Intel 510T is a 10M/100M bit/sec autosensing switch that brings Ethernet or Fast Ethernet directly to the desktop.

It can be stacked and connected via the backplane and managed as a single switch with a stacking interface module priced at $299.

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Intel charged with being patently unfair

Intergraph claims Intel wanted it to relinquish certain patent rights and acted unfairly when refused.

By Joanne Taaffe
Las Vegas

Intergraph Corp. last week filed a lawsuit against Intel Corp. charging that the chip giant has wrongfully tried to coerce it into relinquishing certain patent rights.

The server and workstation company claims that once Intel failed to acquire its patents for free, Intel withheld information causing a delay in the launch of Intergraph's products and interfered with its customer relationships. The Intergraph patents define the architecture of a microprocessor's cache memory management.

"We cannot give away our valuable patents in order to get Intel to treat us fairly, nor should we be required to do so," Intergraph Chairman and CEO Jim Meadlock said in a letter to shareholders.

The lawsuit filed in U.S. District Court, Northern District of Alabama, alleges Intel's wrongful conduct includes the following:

- Interference with business and contractual relations
- Interference with technical assistance from third-party vendors
- Breach of contract
- Misappropriation of trade secrets
- Negligence
- Infringement of computer technology patents owned by Intergraph

Intergraph is asking for monetary damages and injunctive relief from Intel's anticompetitive actions.

The patents in question come from technology developed for Intergraph's Clipper microprocessor, which Intergraph used in its Reduced Instruction Set Computing (RISC)/Unix workstations before the company moved over to the Intel/Windows NT platform, Intergraph said in a statement.

The saga stretches back to 1993, when Wade Patterson, president of Intergraph Computer Systems, suggested that both companies work together on an Intel/Windows platform as an alternative to the RISC/Unix systems. Although the relationship was smooth initially, Intel started to demand broad license grants of Intergraph technology, including the patents in question, as a condition of allowing Intergraph to participate in new product development programs, the Huntsville, Al.-based company said.

Intergraph refused to hand over its license grants and said Intel in May cut marketing and technical support to the company. By failing to tell Intergraph of bugs found in the PIIX4 chip set in May and preventing a third-party vendor from giving Intergraph a bug-testing device in October, Intergraph had to waste resources on testing and delay the launch of workstations, the company said.

Intergraph also claims that Intel hinted to the workstation company's customers that it may fund projects to use workstations other than those from Intergraph. Intergraph can be reached at (205) 922-8340.

Taaffe is a correspondent for IDG News Service's Paris bureau.

INTEL'S TROUBLE WITH THE LAW

May: Digital and Cyrix claim Intel stole their technology and used it in Intel's Pentium line of microprocessors.

September: The Federal Trade Commission begins investigating Intel's business practices. The government is trying to find out if Intel violated antitrust law by trying to monopolize the computer chip market.

October: Datapoint asks the court to forbid Intel to make or sell any products using videoconferencing technology by Datapoint.

November: Intergraph sues Intel over patent infringement and charges that Intel's actions delayed shipment of Intergraph products.

Sun smokes NT with 256 processor server cluster

Software aimed at technical computing market.

By Marc Songini
Palo Alto, Calif.

Sun Microsystems, Inc. wants the world to know that when it comes to clusters, Windows NT is no match for Solaris. While NT 4.0 supports two-node failover clustering and four-way multiprocessing, Sun is set to go with a system that can cluster up to 256 processors.

These processors are no slouches, either. While Microsoft Corp. uses Intel Corp. Pentium-class chips, Sun is using its speedy Reduced Instruction Set Computing-based UltraSPARC IIs.

The new clustering software, HPC 2.0, works across Sun's High Performance Computing server line.

Running 256 UltraSPARCs together gives users a whopping 100 gigaflops per second capacity, Sun boasted. This pushes the Sun servers into the supercomputer class, the company claimed.

Applications now can be run on multiprocessors in a server or across multiple servers in a Solaris network cluster. The servers themselves already can support up to 64 processors that symmetrically multiprocess in a single server.

Getting technical

Sun hopes to capture a big chunk of the estimated $4 billion spent in the technical computing and network markets. Companies doing complex calculations in the automotive, aerospace and academic fields are among Sun's targets.

Earlier this year, Sun took the first steps toward this goal when it announced the rollout of symmetrical multiprocessing tools for its HPC line. In 1999, the company also plans to support clusters of as many as 16 servers with 1,024 processors.

Need for speed

Sun claims there is a greater need than ever among technical users for high-powered servers to handle large database work.

NT 5.0 will cluster 16 nodes by the end of next year, analysts said.

The HPC 2.0 software works with other clustering technology, including the following:

- Scalable Coherent Interface (SCI). Based on a high-speed cluster interconnect standard from IEEE, SCI includes a four-port switch and an S-bus adapter.
- Switch Management Agent, software that configures the SCI switch.
- Cluster Console Manager, software that manages a clustered system and presents the system as a single image.

Pricing for Sun servers bundled with the HPC 2.0 software starts at $25,000.

A Sun HPC 10000 server can be priced at more than a $1 million. The product is shipping now. ■

WIRED WINDOWS

What an OS is — and isn't

Over the next few months, you're going to hear about operating systems a lot as Microsoft and the Department of Justice face off. But not to worry. I'm going to save you all the time it would take to wade through the mountains of paper the lawyers will be creating by telling you all you need to know — right here, right now.

An operating system is the interface between a computer application and the underlying computer hardware. That's it, all you really need to know.

For the more curious among you, or for those who relish my deathless prose, I will elaborate.

Dave Kearns

The operating system actually is a driver for the computer's CPU, although it also interacts with drivers for the other input/output (I/O) devices attached to your computer — the keyboard, display screen, memory chips, mass storage, etc. Through the use of a published application program interface (API), the operating system allows software applications to make common I/O calls, which it then translates into specific calls for the actual hardware installed.

The operating system is not an application in itself, nor is any application a part of the operating system.

Most operating systems shipping today are accompanied by tools and utilities that are actual applications. These facilitate the use of the operating system, demonstrate the potential of applications on the operating system or provide minimal functionality in areas where you may not need all the bells and whistles of a full-blown application.

One example might be a simple text editor to allow you to easily create and maintain text files used to configure or fine-tune the operating system, such as the config.sys, autoexec.bat and win.ini files. Another example might be a simple system monitor that allows you to track the use of system resources.

But remember, these are applications written to the operating system, not an integral part of the operating system.

Web browsers are applications. They are written to the API for an operating system in order to take advantage of the I/O devices attached to the computer. Netscape Navigator is not part of your operating system and neither is Internet Explorer. They conceivably could be used by the operating system as the display interface, but your computer will function quite well without them should you so choose.

Now that we're all clear on just what an operating system is and isn't, we don't have to worry about wading through all of the legalese the Justice Department and Microsoft will try to foist upon us in the months ahead.

Tip of the week

PictureTaker, from LANovation, works with most Web browsers to facilitate push or pull software installations. It also supports the proposed Open Software Description Format, which can be used to provide instructions on requirements that must be met in order to download and install a PictureTaker distribution package. Get the full details at www.lanovation.com.

Comdex offers heaping helping of servers

By Kathleen Ohlson and Terho Uimonen
Las Vegas

Servers of all shapes and sizes were on tap here at Comdex last week.

HP revealed two new Pentium II-powered additions to its Netserver line. The LC II line of workgroup server features up to two 266-MHz or 300-MHz processors and 36G bytes of storage.

Pricing starts at $2,700, with availability scheduled for January.

The LH II line of departmental servers features optional support for Microsoft Corp.'s Cluster Server.

Powered by up to two 266-MHz or 300-MHz processors, the line can be fitted with up to 109.2G bytes of internal hot-swappable storage.

The servers will be available in January, and pricing will start at $4,200.

NCR hits the WorldMark

NCR released the WorldMark 4380 server, an eight-processor Pentium Pro-based system. The server is based on 200-MHz Pentium Pro processors with 512K-byte or 1M-byte cache per CPU. It supports a maximum of 8G bytes of error checking and correcting (ECC) memory, 108G bytes of storage and 10 LAN and 20 WAN connections. Pricing ranges from $17,900 to $60,000.

Acer launched a new server line called the AcerAltos 19000Pro4 and expanded its entry-level server line with AcerAltos 930. The AcerAltos 19000Pro4 is a four-way Pentium Pro symmetric multiprocessing server that has 16 dual in-line memory slots with four-way memory banks for a maximum of 4G bytes of onboard ECC memory. The AcerAltos 930 is powered by a maximum of two Pentium II 233-MHz to 300-MHz processors with 512K bytes of ECC cache.

Both products will be available in December. The AcerAltos 19000Pro4 will cost between $14,000 and $20,000. The AcerAltos 930 will cost between $3,200 and $4,500. For more information, call HP at (415) 857-1501; NCR at (937) 445-5000; and Acer at (408) 432-6200.

Ohlson and Uimonen are correspondents for the IDG News Service Boston bureau.

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SPECIAL FOCUS

Directory services

Meta directory market dawdles

By Christine Burns

Meta directory evangelism is a slow-going process.

The concept of providing a single point of management over many directory services got a lot of attention two years ago when a group of high-end users, a prominent consulting firm and a couple of vendors introduced the novel idea.

The phrase was catchy. The approach was new. The need was there.

So what happened? More specifically, why have meta directory proponents run into serious roadblocks that have slowed deployment momentum in large corporate enterprise networks?

"Nobody wakes up in the morning thinking, 'Gee, I feel like installing a meta directory today.' It's just not that simple," says Larry Gauthier, an analyst at The Burton Group, in Salt Lake City.

The Burton Group and the Network Applications Consortium (NAC), an enterprise network user group Gauthier headed in his former life as MIS director for the University of Michigan, are largely credited with coining the term "meta directory" and defining its function.

By definition, a meta directory collects user account data from any number of network operating system-based or application-specific directories, such as e-mail, workflow or human resources databases, and synchronizes the information between the unrelated services. Meta directory software contains programmable logic called "the join," which understands the relationships between user information contained in the separate directories.

Meta directories are only useful in huge corporations that over the years have deployed disjointed directory strategies, Gauthier says. This restricted market has contributed to the slow proliferation of meta directory services. Meta directories really are geared for use in large Fortune 1000 companies. This has led industry observers to expect slow but steady growth for the niche market.

"These types of companies are entrenched in what they already have and don't tend to move anywhere new very quickly," Gauthier says.

Take Compaq Computer Corp., for example. The Houston-based computer manufacturer signed on early to deploy Zoomit Corp.'s Via meta directory to help manage its 30,000 entries stored in Banyan Systems, Inc., Microsoft Corp., Lotus Development Corp. and other Simple Mail Transfer Protocol-based mail directories.

The project was slated to wrap up last spring but was postponed until this fall because Zoomit's offering requires a common end-user ID across all directories. The closest thing Compaq had resided in the human resources SAP AG database in the form of unique Compaq employee IDs. Because there was no common directory attribute that corresponded to the IDs, the IS team had to spend eight months inserting one into each directory.

"Having these types of large issues crop up has contributed to the fact that we aren't getting the numbers we had originally expected," Gauthier says.

Deployments have been further slowed because of the growing number of segments in the meta directory market. This abundance of choices has users guessing about the right way to go, says Shilpa Agarwal, an analyst at Giga Information Group in Cambridge, Mass.

For example, there are products that follow the meta directory definition closely, such as Via and WorldTalk Corp.'s NetJunction and NetTalk. And there are traditional Unix-based X.500 directory vendors that are now touting their services as a means for syncing-up directory data.

Lower end products, such as Synchronicity from Orem, Utah-based NetVision, Inc., simply expand existing directory services with synchronization tools. Synchronicity expands Novell Inc.'s Novell Directory Service (NDS) to accommodate user account information from NT 4.0, Exchange and Lotus Notes services and allows an administrator to manage those accounts from a single location.

While NetVision President Todd Lawson argues that Synchronicity belongs in the meta directory category, vendors with similar products say they shouldn't be pigeonholed into that niche market.

Novell Administrator for NT pulls NT Server account data into NDS, while Active Directory will have connectors to a variety of existing directory services, providing a single point of management. But Microsoft and Novell shun the term meta directory.

"Putting the label 'meta' on our directory would restrict in customers' minds what NDS can actually do," says Michael Simpson, director of product marketing for Novell's Network Services Division.

But despite muddied market waters and an abundance of messy deployment issues, meta directory vendors contend they are making some headway into corporate IS departments.

Zoomit's President Kim Cameron says since his company shipped Via 1.0 in November 1996, more than 10 customers, ranging in size from 30,000 to 80,000 users, have bought the product. In the near future, it will be easier for vendors to make headway as applications that take advantage of the underlying meta directory are developed, says Simon Khalaf, vice president of marketing at WorldTalk.

The killer meta directory application for WorldTalk is a security system that uses the meta directory to establish coordinated security policies across different e-mail systems. The application, called WorldSecure, is available now. Zoomit hopes a new feature that allows any user who logs in once to the meta directory to gain access to services across the network will help drive Via sales. The capability will ship with Via 2.0 next month.

"People will begin to wake up in the morning wanting to deploy new applications that require a global directory, and that will mean a meta directory," Gauthier says. ■

THE META DIRECTORY FIELD

As the 18-month-old meta directory market slowly begins to take hold, vendors are focusing on different killer apps to make their mark.

Company	Product	Participating directories	Application
Control Data Systems	Rialto Global Directory	X.500, LDAP	Directory synchronization
ICL	i500 Information Gateway	X.500, LDAP	Directory synchronization
Isocore	Global Directory Server	X.500, LDAP	Directory synchronization
NetVision	Synchronicity	NDS, NT domains, Notes, Exchange	Directory synchronization
Novell	Novell Administration for NT	NDS, NT domains, Notes*, Exchange*	Directory synchronization
SoftSwitch	Softswitch Directory Service	X.500, LDAP, IMAP, Notes, cc:Mail	E-mail account synchronization
WorldTalk	Net Junction, NetTalk, World Secure	cc:Mail, Notes, IBM PROFS and SNADS, HP OpenMail, DaVinci Mail, Banyan Intelligent Messaging, Microsoft Mail and Exchange, Novell NDS and GroupWise, POP3, IMAP, LDAP	E-mail account synchronization and common security
Zoomit	Via	cc:Mail, Notes, Exchange, NT domains, NetWare 3.X binderies, NDS, GroupWise, StreetTalk, LDAP, X.500, SMTP*, POP3*, IMAP*	Single sign-on across directories, some security integration

* Not shipping yet.

a ▶

◀ b

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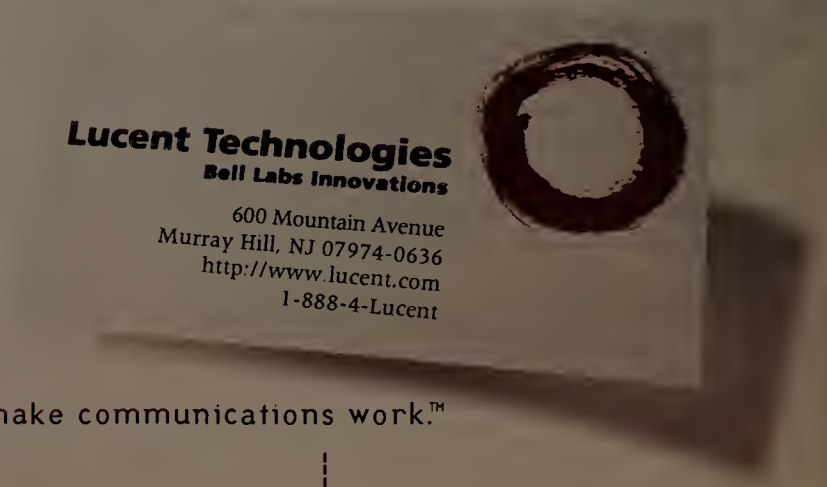

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Briefs

■ **NetScout Systems, Inc.** *last week said it is shipping a Web interface for its network monitoring application.* **WebCast 1.1** *for Unix provides access to NetScout Manager's reporting capabilities through Java interactive Web browsers. A Windows NT version of WebCast will ship Dec. 1, NetScout said. WebCast 1.1 costs $2,495.*

✆ NetScout: (508) 244-4000

■ **Bay Networks, Inc.** *last week announced an Internet access server priced between $750 and $950. Instant Internet[100] provides small offices with analog or ISDN access to the Internet. It ships with three connectivity options: a 33.6K bit/sec analog modem, a 56K bit/sec analog modem or 128K bit/sec ISDN. Instant Internet[100] is available now.*

Bay's *Instant Internet.*[100]

✆ Bay: (508) 670-8888

■ **Cisco Systems, Inc.** *has announced AccessPath-TS3 and AccessPath-LS3, two dial access systems for large enterprise and service providers.*

AccessPath-TS3 and AccessPath-LS3 rack cabinets incorporate Cisco's recently announced AS5300 universal access server. The AccessPath-TS3 scales from 192 to 2,520 ports, while the AccessPath-LS3 is scalable from 96 to 480 ports. AccessPath-LS3 is $525 per port; AccessPath-TS3 is $499 per port.

✆ Cisco: (408) 526-4000

■ **Com21, Inc.** *last week introduced a cable modem that can be used in both one-way and two-way cable systems. The* **COMMUNITY modem** *receives downloads via the cable-TV network, and can send uploads via cable, analog or digital modems over the public phone network. Pricing is unavailable.*

✆ Com21: (408) 953-9100

DSL Lite gets a boost from Rockwell, Nortel

By Tim Greene
Las Vegas

Rockwell Semiconductor and Northern Telecom, Inc. have forged an imposing alliance to capture the market for a promising new digital subscriber line (DSL) technology: DSL Lite.

Rockwell and Nortel last week announced they will collaborate to make interoperable DSL Lite gear that supports data downloads up to 1M bit/sec and uploads at 120K bit/sec. It also will support a simultaneous analog voice channel over a regular telephone line. While it is slower than some other DSL technologies, DSL Lite is easier to install and therefore more attractive to service providers that could provision it at less cost.

WHAT IS DSL LITE?

DSL Lite features:

- 1M bit/sec downloads
- 120K bit/sec uploads
- Carried over regular phone lines
- Can be provisioned from service provider switching offices

Nortel plans to make modems that fit into its existing carrier gear, reducing the hardware investment carriers would have to make in the service. The gear includes Nortel switches as well as remote line termination boxes, known as digital loop carriers. DLCs can support the majority of phone lines in a given area, depending on population density and the age of the local phone network.

Rockwell will sell DSL Lite modem chips that other vendors could use to make modems for customer products. Customers would buy the modems at retail outlets and plug in their PCs, as they do with analog modems or ISDN terminal adapters.

Other vendors already have shown interest in DSL Lite but either are proceeding on their own or waiting for a DSL Lite standard to be set.

Because there is no standard yet for DSL Lite, the alliance could get a jump on other vendors, according to Vern Mackall, a senior analyst at International Data Corp., in New York.

"You rustle the trees and try to get your stuff accepted in the market and make a de facto standard," Mackall said.

Rockwell and Nortel will not have a DSL Lite product until next year. Rockwell calls the technology customer DSL (CDSL), and Nortel calls its offering the 1-Meg Modem.

The Rockwell-Nortel alliance also could speed up a standard for the technology, said Ken Krechmer, who sits on International Telecommunication Union standards committees. "That will get the market moving, and that means the standards work is important and we should get busy," Krechmer said.

Rockwell already sells the key chips that many modem makers use to produce analog modems, and those modem makers could follow suit with DSL Lite modems, Krechmer said.

Amati Communications Corp. plans to make DSL Lite modems but not until a standard is set, according to Tac Berry, Amati's vice president of marketing. That will happen toward the end of 1998, he said. ■

Get more online:

- **Rockwell's white paper on CDSL**
- **DSL primers and news**
- **A review of DSL modems**

www.nwfusion.com

Allot targets bandwidth management

By Jim Duffy
Campbell, Calif.

Now that everybody's banging on Web servers, turning the traditional 80/20 network traffic rule upside down, bandwidth management is as important as ever.

That's why bandwidth management companies and products are now coming out of the woodwork.

Allot Communications, Inc. is the latest to emerge. Allot was founded by former executives from Armon, Ltd., an Israeli Remote Monitoring (RMON) probe company acquired last year by Bay Networks, Inc. (*NW*, March 4, 1996, page 14).

Bandwidth management refers to the ability to establish policies by which network bandwidth is reserved for particular applications. This becomes critical, for instance, when a company's chief financial officer is trying to e-mail vital statistics to the CEO while other users are consuming bandwidth pulling sports updates from the World Wide Web.

Allot will be going up against Packeteer, Inc.'s PacketShaper, Check Point Software Technologies, Ltd.'s Floodgate, Cisco Systems, Inc.'s LocalDirector and sundry RMON vendors. Allot claims to stand out from the crowd because its products combine traffic shaping, load balancing and traffic monitoring.

Products from other vendors address one or the other application, according to Allot.

Allot's offerings, the AC200 and AC300, are designed to enable network managers to set traffic priorities based on applications type and create "commuter lanes" for high-priority traffic. They do this by combining hardware-based network probes for analyzing traffic and a Java-based application for configuring the probes and defining policies.

The AC200 probe is used to control the flow of traffic from internal client sites to the Internet or WAN. It features two 10M/100M bit/sec Ethernet connections: one attaches to the corporate backbone, the other to a router.

The probe analyzes traffic based on IP addresses, TCP ports, URLs and application type, such as Web files and content. As traffic increases, the AC200 regulates bandwidth according to user-defined policies that establish priorities based on addresses, ports or applications.

The end result is that lower priority applications will be slowed down in order to deliver more bandwidth to those with a higher priority, Allot said.

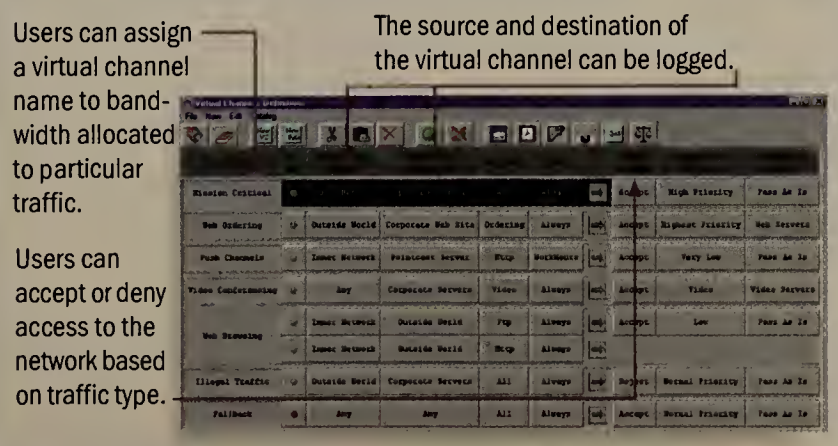
The AC300 contains three network interfaces for controlling and balancing traffic from internal and remote users to corporate servers. The AC300 sports three 10/100 Ethernet ports for connection to the internal backbone, router and server farm.

The AC200 costs $7,000, and the AC300 costs $13,000. Both products will ship in January 1998.

✆ Allot: (408) 377-5114

Management policy

Allot's AC200 and AC300 software allows network managers to define policies for allocating bandwidth to specific applications.



Neo Networks applies parallel processing to routing

By Jim Duffy
Minnetonka, Minn.

Neo Networks, Inc. last week rolled out an Application Specific Integrated Circuit (ASIC)-based router for intranet and Internet service provider backbones that forwards streams of packets based on routing and bridging "rules."

The StreamProcessor router is based on a massively parallel architecture capable of forwarding more than 400 million packets, frames or cells per second, Neo Networks said. This kind of performance is necessary to guarantee service levels for multimedia, security and distributed management applications, the company claims.

The StreamProcessor departs from generic gigabit router and switch products by viewing incoming data as a stream of packets instead of individual packets. With the StreamProcessor, the incoming packet or cell becomes an instruction set for the massively parallel architecture, Neo Networks said.

Incoming data is parsed and directed to more than 1,000 Reduced Instruction Set Computing (RISC) processors for application and protocol processing, and all processing is performed in parallel. While one processor handles application and protocol processing for the data stream, another performs lookup, queuing and prioritization for that stream.

With this architecture, routing, switching and bridging decisions become rules applied to the data stream by the processors, Neo Networks said.

The StreamProcessor 2400 is a 16-slot chassis that sports a 512G bit/sec forwarding fabric, seven custom ASICs and more than 1,000 RISC processors. The 16 slots can hold four- and eight-port Gigabit Ethernet modules and a four-port, 2.5G bit/sec OC-48 card.

Neo Networks' StreamProcessor 2400 *treats data as a stream of bits and performs application, protocol and quality-of-service processing in parallel.*

The StreamProcessor routes IPv4, IPv6 and Novell, Inc.'s IPX traffic and supports the 802.1d Spanning Tree Protocol for bridging. Users also can customize the StreamProcessor by defining rules that operate on any identifiable characteristic in the data stream, regardless of Open Systems Interconnection layer or protocol, Neo Networks said.

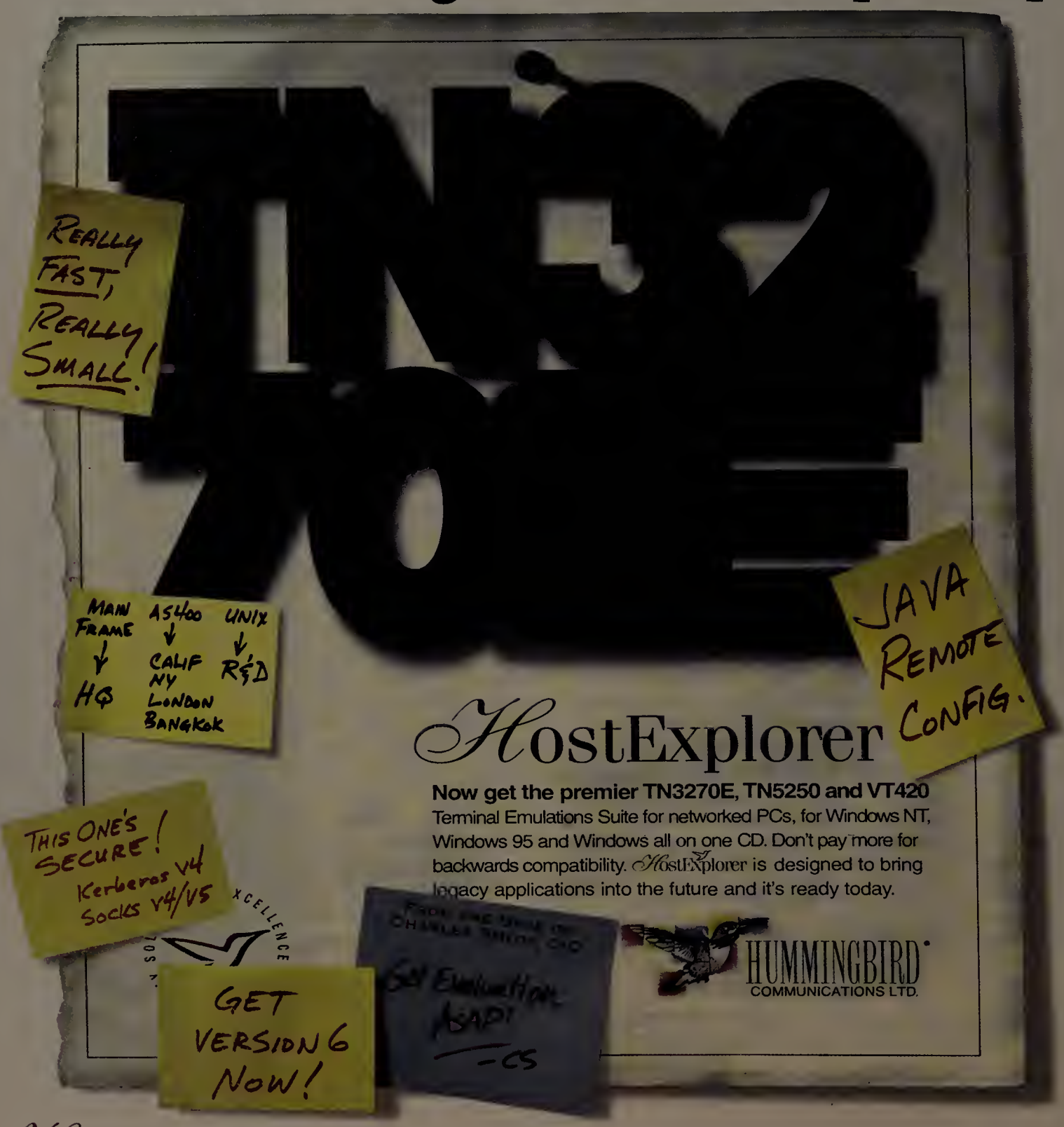
For example, the StreamProcessor can identify a multimedia application, such as video, by its application characteristics and apply combined Resource Reservation Protocol, 802.1p and priority rules to provide quality of service.

The StreamProcessor 2400 also includes a hardware-based multicasting feature called MultiFast. MultiFast copies data streams onto a separate forwarding path for multicast and unicast traffic so it does not interfere with other data transmissions.

The StreamProcessor 2400 will be priced at $2,500 per port, which is competitive with gigabit switches. The StreamProcessor 2400 will enter beta testing during the first quarter of 1998 and be generally available by the second quarter of 1998.

© Neo Networks: (612) 979-1200

To an IT manager, this is a pin-up.



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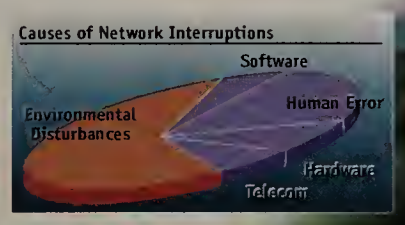

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Any-vendor Compatibility

APC NetShelter and Smart-UPS accommodate mixed-vendor networks which include Dell, IBM, Compaq, HP and other products. Custom mounting kits allow easy installation of virtually any line of servers, disk storage or accessories at a price much less than other premium enclosures. NetShelter's fully ventilated design exceeds most vendor requirements for third-party racks, yet maintains superior security and flexibility.

NetShelter's environmental and security features prevent downtime and provide peace of mind. To plan which equipment to install or to order NetShelter, call the Free Rack Configuration Center (see coupon) and an APC expert will help design a perfect solution.

NetShelter's Environmental and Security Features

Beat more than half of all network interruptions: APC UPSs, software and accessories offer a completely protected network environment

PowerChute® plus *software offers unattended system shutdown, extensive UPS testing/status, remote UPS management and environmental/ power monitoring so you can be sure you're protected.*

APC Smart-UPS *eliminates problems related to bad power, the single greatest cause of data loss. Power problems are the most common of all network hazards, affecting more than 75% of all networks (source: Contingency Planning).*

Measure-UPS™ *accessory monitors temperature and humidity and up to four dry-closure contacts in the NetShelter's environment, even during power outages. Measure-UPS along with APC software can alert you and initiate a safe system shutdown.*

Share-UPS™ *provides reliable shutdown for multiple servers and offers a rack mountable solution for unattended safe shutdown of up to 8 servers (running the same or different operating systems)—all from one UPS!*

MasterSwitch™ *Web/SNMP/LAN-controlled network power controller can easily reboot remote servers, internetworking equipment, or banks of modems, via browser or NMS to reduce on-site service calls.*

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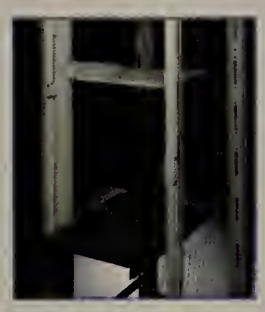
Keyboard shelf with retractable mouse pad

Compaq mounting kit for Compaq servers, subsystems and accessories.



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CIO ,Cyberplay Computer Exploration Centers

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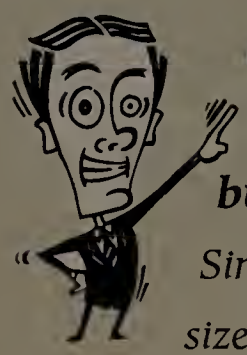

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Briefs

■ **AT&T** *has conceded it has suspended mass marketing of* **local phone service.** *AT&T President John Zeglis blamed the action on faulty regional Bell operating company ordering and interconnection systems. Analyst Jeff Kagan, of Kagan Telecom Associates in Atlanta, said AT&T is fearful of an order backlog it cannot fulfill, although it will continue to support current local customers.*

HERMAN FARRER

USTA's *Neel*

The RBOCs' trade group had a different spin. "It is a shame that a powerhouse like AT&T has to continue to use the local telephone companies as scapegoats to save itself from bad days on Wall Street," said Roy Neel, president of the U.S. Telephone Association.

■ **GTE Internetworking** *(formerly BBN Corp.), a subsidiary of GTE Corp., announced it is* **acquiring Genuity, Inc.,** *Bechtel Enterprises, Inc.'s Internet service provider subsidiary. The terms of the deal were not revealed. In addition to offering dedicated Internet access, Genuity also offers virtual private network services over its ATM-based backbone. Web hosting and colocation services also are available at any of its seven national data centers.*

■ **UUNET Technologies** *last week announced that its* **dial-up Internet access** *customers will be able to get to the 'Net faster. UUNET has added 56K bit/sec dial-up support at 415 points of presence throughout the country. Customers will be able to dial in using a K56flex-compliant modem.*

The price of the service will not change. GTE Internetworking, AT&T WorldNet, Netcom Online Communication Services, Inc. and America Online, Inc. all have recently announced 56K support.

Users to regulators: Let Bell Atlantic offer services

Customers want to see RBOCs proposed long-distance business opened without government restrictions.

By David Rohde
New York

Waving aside protests from big long-distance carriers, users are largely backing a landmark application by Bell Atlantic Corp. to enter the long-distance business.

During a roundtable discussion at the recent Communications Managers Association (CMA) convention here, users said allowing the regional Bell operating company to expand its horizons would give it fewer excuses for not providing a full range of service.

Users also expressed discomfort with allowing long-distance carriers to demand that there be a certain level of local competition before they take the shackles off Bell Atlantic or other RBOCs. "I'd like to see no holds barred," said Ron West, president of the CMA and manager of telecommunications for Shearman & Sterling, a Wall Street law firm. "We're just not benefiting from all the restrictions on carriers."

"You get tired of hearing that they can't do something because of the regulatory restrictions," said Matthew O'Brien, past president of the CMA and senior analyst for access planning at Splitrock Services, Inc., of Yorktown Heights, N.Y.

Bell Atlantic earlier this month filed with the New York Public Service Commission to enter the long-distance business throughout the state. BellSouth Corp. has similar applications pending in some of its territory (see graphic).

The Federal Communications Commission recently rejected an application by Ameritech Corp. to begin long-distance service in Michigan, but encouraged the RBOC to apply again after saying it had made some progress in opening up its local markets to competitors. RBOCs must demonstrate an open local market before getting authority to offer long-distance service.

AT&T and MCI Communications Corp. have opposed all of the RBOCs' long-distance applications. They claim Bell Atlantic and the other RBOCs do not have adequate electronic ordering systems in place for new local competitors to swap data about customers who want to switch carriers. But Ellen Van Cleve, director of wide-area networking at the New York Times Co., said it was "hypocritical" for those carriers to make that argument.

"Since when do AT&T and MCI have such wonderful ordering systems?" she said. Van Cleve said it took months for AT&T to straighten out her bills after *The New York Times* signed up for OneNet, AT&T's contractual combination of outbound and inbound voice services plus private lines or frame relay.

Other users said the regulators should not assume that just because corporations continue to use the RBOC, there isn't competition available. They noted the recent shortage of high-capacity circuits in many areas of the country and said that may mean it is to their advantage to stay on their existing contracts with incumbent local carriers for a while. "If there is no excess [capacity] out there, there is no advantage of going with another vendor for the most part for the services we use," said Charles Murray, director of telecommunications for Travelers Property & Casualty, Inc., a large insurance company based in Hartford, Conn. ■

Making the case

The status of three applications by RBOCs requesting entrance into the long-distance market:

State	Carrier	Ruling of state regulators	Recommendation of U.S. Department of Justice	Final decision by FCC
Louisiana	BellSouth	Approved Aug. 27, 1997	Pending	Pending
New York	Bell Atlantic	Pending	Will review after state ruling	Will review after state ruling
South Carolina	BellSouth	Approved July 24, 1997	Recommended denial Nov. 4, 1997	Expected soon

RBOCs must apply separately for each state. Approval by state regulators and the FCC is required. The Justice Department's recommendation is nonbinding.

WorldCom has lots of wireless work ahead

By Denise Pappalardo and David Rohde

While it is true that the new MCI WorldCom will have network assets galore, it is light in one area: wireless services.

WorldCom, Inc. is putting $37 billion on the table to snag MCI Communications Corp., based on the companies' many synergies in the local, long-distance, Internet and data markets (*NW*, page 1, Nov. 17).

But what about wireless assets?

Neither WorldCom nor MCI owns substantial wireless capacity. Instead, they act as resellers of other licensees' airtime

MCI Chairman Bert Roberts has defended the approach, saying it preserves capital. But users say that is the opposite rationalization WorldCom and MCI make in the local market, where they deride AT&T's so-far-unsuccessful reliance on reselling regional Bell operating companies' local lines.

"We have a lot of cell phones in our network," said Rich Parker, director of technology and telecommunications for Allied Van Lines, Inc., headquartered in Naperville, Ill. "I'd like to see [MCI and WorldCom] have more play there. AT&T probably has a leg up in the wireless market."

Get more online:

- **Our complete package on telecom competition and the FCC**
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But WorldCom does not see its lack of wireless assets as a hindrance. During the press conference announcing MCI's acceptance of WorldCom's hefty bid, Bernard Ebbers, WorldCom's CEO, quipped that when the company sees a significant financial advantage in getting into the wireless service market, it will look into partnering or even purchasing its way in.

While some cited concerns about merger-induced upheaval and holes in the companies' product lines, most customers are looking forward to the union.

"I can't tell you how thrilled I am that a company that used to be sneered at by the big three is now going to take one of them over," said Andrew Stratford, vice president at Congress Financial Corp., a New York-based financial services company.

The merger has been approved by the boards of both companies, but stockholder and federal government approval is still pending. Most believe the deal will not be final until mid-1998 at the earliest. ■

WAN MONITOR

Megabandwidth, megadollars?

Everybody and their dog seems interested in the digital subscriber line (DSL) market these days.

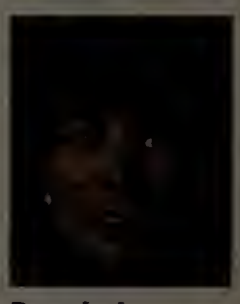
TeleChoice will be publishing its most recent projections on the size and growth of this market early next year. Our projections from early this year place the total number of lines installed by year-end at just under 366,000 for North America and 560,000 worldwide. However, these numbers are distorted because of high-bit-rate DSL's provisioning of plain-vanilla T-1 services.

Depending on your assumptions about pricing, the xDSL market size is between $200 million and $440 million. New services that deliver high-speed Internet or corporate connectivity make up less than 10% of those numbers. Not a very big market, but then xDSL services really haven't been widely available.

Will this change in 1998? In order for xDSL to be a mass-market phenomenon, someone has to create the market. Granted, the early market success of xDSL will ride the coattails of the Internet.

This is where the service providers play an important role. The services need to be packaged and priced right.

Today, most DSL-based services are packaged with a single purpose — Internet access. This type of market strategy will enable the service provider to get a lock on early customers beyond the current residential Internet users, while DSL customer premises equipment matures and evolves into a new beast: a Trojan horse.



Daniel Briere and Christine Heckart

The Trojan horse will facilitate the development of bundled services targeted at residential and business users.

If you've analyzed recent service announcements from the U.S. telcos, their desire to serve wide markets is questionable given some of the packaging, pricing and support decisions that have been made. The general reply to questions about this activity is that demand is so great, they can charge whatever they want and still have people beating down the doors.

Our current favorite DSL-based service package is from US WEST's !nterprise. As usual, it has done a good job packaging the service and setting a low price aimed at successfully penetrating a given market.

The lower tier megabit service is just above the bandwidth for ISDN, so it doesn't directly compete. Pretty sneaky. The price is $60 per month including Internet access. The installation cost is about $200.

!nterprise also offers a 384K bit/sec option priced less than $100 and 704K bit/sec for around $125 month. This is definitely the most aggressively priced set of DSL-based services in the industry.

What we like about !nterprise's approach, aside from the aggressive price and good installation package, is that it is tiered.

Users don't have to immediately commit to spending $100 or more per month. They can start small and work up. Also, there aren't so many choices as to make it confusing.

Briere is president and Heckart is vice president with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

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Briefs

■ **Martha Hanlon,** *director of enterprise access and applications marketing at* **MCI Communications Corp.,** *has been elected chairperson of the* **Electronic Messaging Association's (EMA)** *board of directors. Hanlon, a 10-year MCI veteran, has been on the EMA board since 1994. The EMA is made up of about 600 vendor and customer organizations.*

MCI's *Hanlon*

■ **Oracle Corp.** *last week announced the creation of a new 500-person division dedicated to developing integrated applications for tasks such as messaging, workflow and electronic commerce.*

The integrated **Application Server division** *will be headed by Senior Vice President* **Beatriz Infante,** *who will take over development of Oracle's InterOffice database-based messaging software line.*

Infante will continue to report directly to Oracle Chairman and CEO Larry Ellison, the company said. The new division will be responsible for product development and marketing of Oracle's Web Application Server, Internet Commerce Server and InterOffice products, as well as several others under development.

■ *Application development tool vendor* **Borland International, Inc.** *last week announced an agreement to buy* **Visigenic Software, Inc.,** *a San Mateo, Calif., maker of middleware, in a stock swap valued at more than $100 million.*

Visigenic's object request broker technology has been licensed by leading vendors such as Netscape Communications Corp. and Oracle Corp. Roger Sippl, founder, chairman and CEO of Visigenic, will become chief technology officer at Borland, located in Scotts Valley, Calif.

XML seen untangling the Web

By Paul McNamara

Heartened by a public profession of faith from Microsoft Corp. Chairman Bill Gates, vendors evangelizing the Extensible Markup Language (XML) believe they are nearing the day when the technology makes Web-based document searches far more precise and valuable.

An evolving World Wide Web Consortium standard, XML is a subset of the long-established Standard Generalized Markup Language (SGML). It is designed to give end users and applications easy access to SGML documents via the Web.

SGML is a standard text format used in popular applications such as word processors.

Why XML matters

According to its proponents, XML eventually will allow users to:

- Deliver highly structured, detailed data over the Web with a fidelity not possible in HTML.
- Publish the enormous volumes of data already created in SGML on the Web.
- Conduct more accurate and useful Web searches.
- Execute transaction-oriented applications, such as the creation and management of consumer financial transactions, health records and insurance enrollments.

The idea behind XML is for categories of Web participants, say health insurers or car dealers, to define a data model consisting of specific XML document tags.

The XML data model would allow for better Web search results and interaction between applications than is now possible with the finite roster of document tags provided within HTML.

Microsoft's Internet Explorer 4.0 offers limited support for XML, while Netscape Communications Corp. is promising support in a future release of its Navigator Web browser.

Sixty vendors, including Microsoft and Netscape, will gather to demonstrate and advance the technology at the SGML/XML '97 conference in Washington, D.C., Dec. 8 to 11. The event is sponsored by the Graphic Communications Association (GCA).

"Obviously, XML is catching a lot of interest across the industry," said Don Thieme, vice president of marketing and communications for GCA. "There's a lot of hope that XML will be the extension of SGML that a lot of folks have wanted to provide greater interoperability with HTML and the Web."

At a recent trade conference in San Francisco, Gates helped demonstrate an XML application using Internet Explorer and XML-enabled software from ArborText, Inc., of Ann Arbor, Mich., to access *The Wall Street Journal* Interactive Edition.

"What XML will do is lower the cost of deploying richer, more interactive, more powerful and ultimately more business-critical applications on the Web," said PG Bartlett, vice president of marketing at ArborText. "With Microsoft paving the way, it makes all of us believe that there is really going to be a lot of momentum behind this."

Bartlett also believes Netscape may have fallen behind the curve, a contention that Netscape dismisses as premature.

"We will be endorsing [XML] in upcoming products," said Eckart Walther, a Netscape product manager. "We think it's a really big deal." But he noted that Netscape has not missed the XML boat, given that "there is no XML content out there right now, anyway."

Walther said it is important for people to understand what XML can and cannot accomplish. "If you see XML as a replacement for HTML, that is just not where XML is heading right now," he said. ■

Get more online:
- An overview of how to use XML
- A copy of the spec and related documents

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Atreve software to lighten Web management load

WebSpective 1.5 package addresses application and network performance.

By Andy Eddy
Cambridge, Mass.

When it comes to creating and managing a Web site, most of the issues come down to what content and applications should be included.

While that will never change, another recent focus has been on how to achieve peak network performance. Atreve Software, Inc. intends to make the process easier.

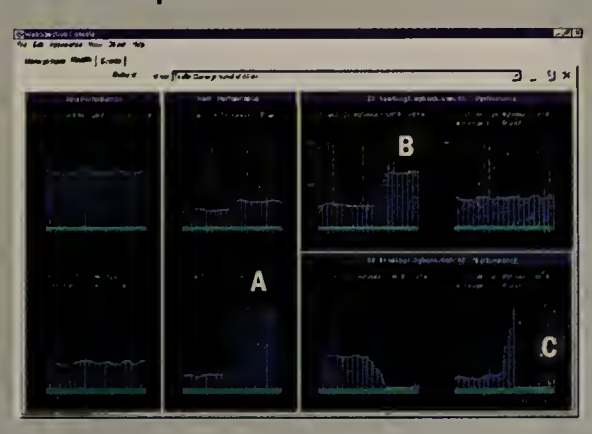
WebSpective 1.5, the first widespread release of Atreve's software, combines the functions of a network administrator's right-hand man with that of a traffic cop. The software monitors an array of servers and Web application links with little regard for the number of servers and the degree to which they are geographically scattered. Administration takes place on a convenient on-screen console.

In addition, key files detailing the performance of these servers may be strewn all over the network. WebSpective enables the information to be compiled in a centralized database for charting, analysis and reporting.

WebSpective's foundation is "providing businesses with the insight and control to manage their Web applications," said Swapnil Shah, Atreve's vice president of product strategy. But Atreve's software also incorporates traffic management because "it's a fundamental need," he said.

Controlling Overloaded Servers

A) WebSpective 1.5 sees that a processor's load is at an unacceptable level.



B) It shifts the traffic to another server that can better handle it without affecting users.

C) Once the overloaded server recovers, traffic is more evenly spread among the servers.

The software automates tasks and decision-making that an administrator would normally have to deal with manually.

"Knowing that a Web server went down isn't good enough," Shah said. "At the highest level, you want to know, if a server goes down, what business applications are affected. The effect [of WebSpective] from the end users' perspective is that they're [connected] to another machine that's handling that same application without a slowdown in performance."

NetNumina Solutions, Inc., based in Boston, builds mission-critical applications for companies using the Internet. Greg Sabatino, the company's CEO, explained that WebSpective is used to help administrate sites for his clients, as well as those within his own company.

See **Atreve,** *page 40*

Access control software makes its debut

By Ellen Messmer
Washington, D.C.

Setting up access controls to manage employee use of network resources in a large organization has always been a challenge, but products announced at the Computer Security Institute show here are aimed at simplifying the job.

EagleEye Control Software, a subsidiary of New Dimension Software, Ltd., will announce a version of its Control-SA product that lets network administrators set up centralized access control for several database, groupware and business applications. Control-SA 2.1 adds centralized access control for Oracle Corp. applications, SAP AG applications and Lotus Development Corp. Notes, said product manager Danny Moser.

Additionally, the new version now supports Computer Associates International, Inc.'s CA-Top Secret and CA-ACF2 products for mainframe access.

EagleEye's software, which starts at $25,000, already provided centralized access control for Windows NT, Resource Access Control Facility (RACF), NetWare, Unix, OS/2, LAN Server and Memco Software, Ltd.'s SeOS.

Platinum products

Separately, Platinum Technology, Inc. introduced two access control products. The company's AutoSecure Single Sign-On 5.0 software enables administrators to manage users registered across multiple servers. Administrators can give the end users single sign-on access to multiple network resources via Lightweight Directory Access Protocol technology.

For Web access control, Platinum has introduced Web Security Manager, now in beta testing. The software extends the AutoSecure Single Sign-On functions to intranets.

COMPUTER SECURITY 24th ANNUAL

Platinum's single sign-on products, which cost about $125 per seat, use a role-based authorization model that presumes sales staff, customers and financial managers, for instance, should be able to access URLs based on their role.

If you are concerned about underlying security holes in Web servers, the National Computer Security Association will run a security check on your Web. The service, called NCSA Perimeter Check, costs $4,000 for quarterly reports for one year.

✆ New Dimension: (714) 757-4300; Platinum: (630) 691-0681; NCSA: (717) 258-1816

Atreve

Continued from page 39

"WebSpective lets us take a holistic approach to managing the application components as well as the Web traffic. This is the first tool that allows us to do all-in-one management of a site," he said.

One project that NetNumina currently is establishing involves servers located in Boston, New York, San Francisco and Paris. Sabatino said the servers will store portfolios of fashion models, which then can be accessed by prospective clients via the Internet. WebSpective will be used to remotely administrate the servers.

WebSpective 1.5 is shipping now for Solaris 2.51 or higher or Windows NT 4.0 or higher. It works on servers that comply with Netscape Communications Corp. (NSAPI) or Microsoft Corp. (ISAPI) formats. The base package, which covers two Web servers at one location, starts at $20,000, and the cost increases depending on the complexity of the site.

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'NET INSIDER

IP under all?

In previous columns I have lamented the fact that a few years ago some ATM proponents loudly proclaimed their technology would become the common network sinew for the globe.

They said it would replace all LAN and WAN links and protocols — IP was to be replaced by a seamless global mesh of ATM. There were not many people who felt this way, but their influence was out of proportion to their number.

All too much of the trade press fell for their "ATM under all" evangelizing and grossly distorted readers' ability to reasonably evaluate what was the best technology for their own networks. Now it is true that the people most convinced were the people furthest removed from those actually running data networks. The people in the trenches just kept buying Ethernets and converting to TCP/IP.

Now the same type of hype is being applied to IP. At the Next Generation Networks conference earlier this month, conference chairman John McQuillan noted in the wrap-up session that "IP has won." He was referring to the current general assumption that IP and the Internet are the common bearer service, as the Network Research Council's *Realizing the Information Future* book put it.

Some audience members thought he was referring to some IP vs. ATM contest. But McQuillan explained this was not the case, given that IP can run over ATM just fine. This, he said, was more a case of IP winning the general network business away from SNA, IPX and other network protocols and winning the mind share of network professionals.

But many of the conference's sessions, as well as other conferences and trade press articles, have started to show a disturbing trend. Too many people now are seeing IP in the same way that those few people saw ATM, as the universal underlying technology. Voice over IP, video over IP, commerce over the Internet — suddenly IP is the answer. What was your question?

Scott Bradner

Even the big consulting companies have begun to make a glacial turn away from a pure ATM future to at least a future in which ATM shares the stage with IP.

I am worried that too much is being expected of IP and the Internet, just like there were unreasonable expectations placed on ATM. And I'm worried that when IP and the Internet are not able to meet some of these expectations there will be a backlash that will devalue these technologies for applications for which they are well suited.

Voice over IP, video over IP, commerce over the Internet — suddenly IP is the answer. What was your question?

I am not at all convinced that a common IP Internet infrastructure is the best or most cost-effective way to upgrade the global telephone network or to bring network TV and video on demand to the home.

It does not follow that just because IP does many things very well it will do all things very well. There seems to be a hunger for single answers to collections of problems; reality is not always ready to feed that hunger. A little analysis and common sense is not out of place here.

Disclaimer: Harvard understands glacial movements well, but the rest are my own observations.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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I'm looking for suggestions, how-to examples, completed requests for proposal and, if possible, a comprehensive, downloadable model frame relay RFP. I'm planning for a major WAN upgrade.

Via NWFusion

Try starting with the commercial data communications group at your local telephone company, major long-distance carriers and systems engineers at router vendors. Regarding the latter, I have had good luck with Cisco Systems, Inc.'s engineers keeping me up to date on changes in frame relay and offering suggestions on implementation.

If you need frame relay service in more than one phone company's serving area, consider using a major carrier. When evaluating major carriers, find out what role their network operations center personnel play in problem resolution and whether they own or rent the lines in your target service areas. The systems engineers at the router vendors also may provide useful information.

You definitely will want to find out from your service provider how many frame relay switches serve the areas you want connectivity in.

One of the key criteria to remember when designing a frame relay or another WAN is the need to avoid a single point of failure. Frame relay switch failure is unusual, but it is possible.

At data centers you likely will need more than one feed to accommodate the incoming traffic from all the remote locations. Request that the local phone company use disparate routing to handle the additional incoming local-loop connections to the frame relay cloud. This means the phone company will bring in local loop from different directions or central offices to minimize downtime due to carrier failure or other CO problems.

Another option is dial backup, so you can keep some connectivity if your frame relay service fails.

Extending the reach of SNA in a TCP/IP world

By Lee Rafalow

If your organization is like most large enterprises, for years it has been running its business using SNA.

But how do you gain access to SNA-based applications and data in an intranet environment — reliably and without having to invest heavily in technology that lets mainframes communicate with departmental networks?

IBM has developed software called Enterprise Extender to help solve this problem and has opened it for multivendor support. Today, however, it runs only on IBM's router, server and front-end processor families.

Trillions of dollars have been invested worldwide in applications built on SNA, a set of communication APIs and networking protocols. Several technologies help capitalize on existing SNA-based applications and data for intranet use. Web-to-SNA gateways and TN3270 servers may reside in the SNA application host or separate systems, and provide application-level conversions and other services such as Java applet support.

Transporting data from systems built on SNA in networks built around the Internet Protocol (IP) has not been simple. Network transport and switching technologies must provide smooth and stable network evolution and flexibility in deploying other intranet integration tools. Enterprise Extender software integrates the SNA and IP components while providing SNA-quality failure protection, scalability and traffic control.

Enterprise Extender uses SNA's High Performance Routing (HPR) technology to provide advanced transport service. It uses User Datagram Protocol (UDP) and IP to provide efficient routing in the IP network without changing existing router hardware or software in the network infrastructure.

The new technology can be applied in communication servers that may be coresident with Web services or in routers and front-end processors. Enterprise Extender offers a number of benefits. For example, at data center routers, a single router failure can result in thousands of lost sessions and long session restart delays. With Data Link Switching (DLSw), for example, the DLSw access routers are single points of failure.

By contrast, Enterprise Extender integrates HPR and IP and switches around failures at these network edges. In the data center router example, HPR running in the application host detects the router failure and switches to a different router; a short delay for the path switch is the only impact.

Because it integrates HPR and IP, Enterprise Extender lets users deploy the IBM Parallel Enterprise Server's MultiNode Persistent Sessions (MNPS) to provide automatic recovery from failures in the SNA application. MNPS uses HPR to maintain the sessions and switch to an alternate instance of the application server.

Since the session does not have to restart, network impact is reduced, recovery time is shortened and application subsystems are able to recover transparently with no effect on the user.

Enterprise Extender lets routers do what they do best: forward packets. It does not require TCP/IP encapsulation. Unlike DLSw, there is no link-procedure spoofing to terminate link timers and no TCP with its retransmit buffers and timers. The router simply adds or strips the UDP/IP framing and forwards the packet. HPR's transport logic is in the end systems where it belongs.

For years, SNA applications have had the advantages of traffic control. Application-level service profiles are mapped to network classes of services that specify the required service characteristics, such as propagation delay, security and relative priority. Enterprise Extender uses these specified classes of service to set traffic priority in IP.

Most routers provide some form of traffic priority. But with these priority queuing mechanisms, the router must have a complex set of filters or, as with DLSw, the SNA devices must be configured with multiple links, one for each required priority. This complexity makes it impractical for many network administrators to use the priority functions at their disposal.

Enterprise Extender helps take some of the complexity out of controlling SNA traffic in an IP environment by mapping the real SNA priority to UDP port numbers. These port number mappings, which have been registered with the Internet Assigned Numbers Authority to ensure common industry usage, can be deployed in the router net to achieve the level of traffic control familiar to SNA users.

IBM is sharing Enterprise Extender with other vendors by working with standards bodies. With more than 50 member companies, the APPN Implementers Workshop (AIW) is the industry standards body for SNA technology. The AIW is refining the specifications for Enterprise Extender, and the information then will be provided to the Internet Engineering Task Force, the industry standards body for IP technology.

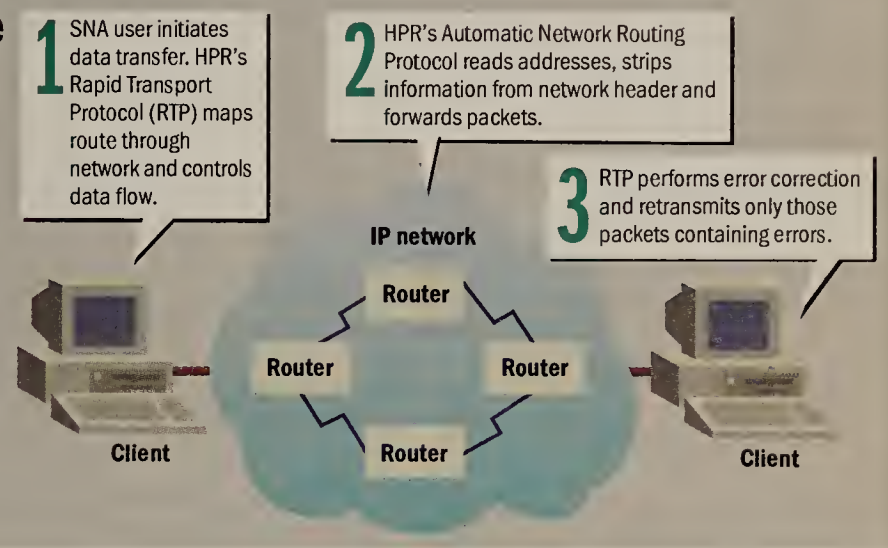
As you look to expand intranet deployment, Enterprise Extender can provide the flexibility to place intranet servers that access SNA applications and data without an SNA backbone. You can use the technology to preserve investments in both SNA applications and IP infrastructure and enhance those investments with improved reliability, scalability and control.

Rafalow is a senior software engineer in IBM's Networking Software Technology division. He can be reached at rafalow@vnet.ibm.com.

HOW IT WORKS

High Performance Routing

IBM's Enterprise Extender software's chief component is the High Performance Routing (HPR) protocol. HPR combines the nondisruptive rerouting capabilities found in IP as well as the congestion-control and class-of-service features of SNA to provide improved network performance and more efficient use of bandwidth.



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EDITORIAL *insights*

Wrong, Java boy!

Scott McNealy recently complained that the press, the trades in particular, is pro-Microsoft — that we are basically giving evil Bill and his boys a free ride.

As a journalist, I was more than a bit offended by the remarks. After all, I remember writing plenty of stories about Microsoft products being late or full of bugs, late products, and of secret Windows functions only Microsoft application developers were privy to. On top of that, there was a slew of copy about allegations competitors made against Microsoft to the U.S. government. This all got Bill plenty steamed.

The fact is, I'm not sure Scott would want the type of press coverage that the object of his obsession, Bill Gates, has received.

Would Scott like to be called a geek and a nerd, over and over again? How about Satan? The press also has made fun of Bill's looks and physique.

How about being labeled power hungry, scheming or diabolical? What about the implications that Bill has no life or interests outside of computers, something that is patently false but nevertheless is a common perception?

There is a "Punch Bill Gates" Web site. Do you want one of those Scott? Do you want Ralph Nader implying you are the antichrist, as he seems to be doing with Bill?

Gates has taken a lot of shots. His products have taken a lot of shots. Over the years, nothing has been beaten on in the press more than Windows. But all the while, Microsoft just took it and never whined about it in any speech.

So how has Sun and its chief executive been treated? Let's see.

In *Fortune*, Scott McNealy is Java Man, battling the forces of evil, able to leap tall buildings, all the rest. In short, Java is the Second Coming, it will change the world. Talk about a free ride.

The press loves McNealy. Every silly, nasty, overly clever thing Scott says about Microsoft or Windows is dutifully noted — as if McNealy is President Bill Clinton talking about Iraq. And this is a guy who barely deigns to talk to the trade press.

Let's summarize. According to the press, Microsoft is run by Beezlebub and has never built an innovative product in its life. Sun, on the other hand, is a true pioneer, the good guys that will save us from a horrible Windows future.

Yeah, I guess we are pretty pro-Microsoft.

P.S. There is one area in which Microsoft is clearly getting a free ride — Windows NT. The press and analysts write about this stuff over and over again, new feature this, taking over the world that. Meanwhile, the admittedly superior Solaris gets discussed about as much as the Commodore Amiga. So Scott, you've got us there — big time.

Doug Barney, news editor dbarney@nww.com

Totally Unplugged • Ira Brodsky

Sanctity of the Internet goes down in flames

Libertarian activist Ian Goddard, who along with veteran news correspondent Pierre Salinger promoted the theory that TWA Flight 800 was shot down by a U.S. Navy missile, recently issued a public apology. Goddard used the Internet to trumpet his unsubstantiated charges for almost a year, but now he admits his campaign "was reckless and a mistake." This should make everyone — educators, business users and consumers — stop and think about what is good and bad about the Internet.

Vice President Al Gore suggests there is an urgent need to link all of our nation's schools to the information superhighway. He warns of the rapid growth of a new group of disenfranchised persons: the information have-nots. Taking his cue, educators have developed an almost devout reverence for the Internet. Schools have become so busy making certain every child learns how to access information, they have forgotten to consider the quality of that information.

The TWA Flight 800 affair reminds us the Internet's strength also is its weakness. With the Internet, just about anyone can publish just about anything.

What does this mean to business users? A start-up company can put information on their products within easy reach of millions of potential customers. But someone else can just as readily spread false rumors that their products don't work or that the firm is on the verge of bankruptcy. Contrary to what some cyberspace fanatics think, the Internet has more in common with the magazine rack than the library. Yes, there are some excellent magazines with good, if time-sensitive, information. There also are quite a few mediocre magazines. But many are just plain trash.

The Internet is in some ways like television. TV's inventors believed it would be used to beam opera into the living rooms of average families. We now know the average family prefers *Roseanne*. The nice thing about the Internet, however, is that there are enough "channels" to accommodate the sublime, the garbage and everything in between.

What I find most useful about the Internet is that it is a fountain of business news. Given the volume of news and the limited time available for preparing it, however, there often are mistakes. And some news sources freely mix facts with analysis. So the first thing I do with news downloaded from the 'Net is ask myself, "Is it true, false or just opinion?"

It's also important to remember the Internet is still evolving. There are many unresolved issues that could impact the free flow of information. Individuals want privacy, but law enforcement authorities request the ability to eavesdrop for purposes of conducting legitimate criminal investigations. Parents don't want their teenagers to be left behind, but they also don't want them accessing pornography or corresponding with pedophiles. Buyers and sellers want to conduct business over the 'Net, but citizens have come to depend on government to prevent fraud and, in many cases, guarantee quality.

What about the many lively debates that take place on the 'Net? I participated in such a forum with Goddard around the time he first aired his Navy missile theory and challenged him to substantiate his charges. The thread is archived at www.alienlogic.com/exi-lists/extropians.96/2729.html.

Yes, the Internet is a wonderful vehicle for the exchange of ideas. But it also is the most powerful tool ever invented for the spread of misinformation.

I don't know if Goddard recanted because of a genuine change of heart or a threatened libel suit. But perhaps something good will come of his mistake if it reminds business users, educators and consumers of this simple truth: You can't believe everything you read, see or hear on the Internet.

Brodsky is president of Datacomm Research Co., a Chesterfield, Mo.-based consulting firm. He can be reached at ibrodsky@ix.netcom.com.

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

Users wanted

Your "Reporter's Notebook" item on the Enterprise Computer Telephony Forum's (ECTF) new user membership category (Oct. 13, page 84) gives the erroneous impression that the ECTF had attempted and failed to attract a significant number of user members when it was formed in 1995. Although the forum has always been open to any company, including user organizations, it is only with the recent introduction of the user member category that the ECTF has begun to actively recruit end users.

Since its formation, the ECTF has published seven interoperability agreements or white papers, that are currently avail-

How the WorldCom/MCI deal will change the 'Net

Communications is a business, and in business the relationships between players often count more than the technology or market trends. This is true for the Internet as much as for any other kind of communications network. What effect, then, will WorldCom's purchase of MCI have on the 'Net?

MCI and WorldCom claim there is no Internet dimension to their merger. But given that WorldCom's UUNET is the No. 1 business Internet service provider and MCI is one of the largest owners of Internet infrastructure, if not the largest, that's kind of hard to believe. The deal seems to be both the result and an indicator of business trends on the 'Net.

The creation of a type of super-ISP is sure to spawn other mergers. It's likely that GTE, AT&T and Sprint will try to snap up other ISPs that either have large business customer bases or large infrastructures. This will put pressure on the regional Bell operating companies, which are the only deep-pocket network players that don't have a huge Internet investment.

Why the RBOCs? Because the Internet is a nice service magnet that WorldCom can use to draw away customers from the RBOCs. To counter the WorldCom threat, the RBOCs probably will accelerate their Internet deployment, and their compliance with the Telecommunications Act of 1996, in order to get into the regional toll market before WorldCom eats up all the competition.

This RBOC aggression will play an important role in the evolution of Internet technology. Today's ISPs tend to build traditional router networks, some with a bit of ATM at the core. More adventurous uses of ATM and frame relay would be easier for carriers with little preexisting Internet business to adopt, so the RBOCs surely will be targets of vendors such as Ascend, Newbridge, Nortel and Lucent, whose IP/ATM architectures are more ATM-like than router-like.

The WorldCom/MCI deal will affect Internet technology in another way: by promoting the concept of the unifying, wholesale ISP. As really big facilities-owning carriers get into the Internet space, they will have commanding advantages in cost of transport, switching and access. To stay in business, the smaller ISPs increasingly will lease facilities from these big players rather than deploy their own lines and points of presence.

A wholesale ISP structure such as this brings business and technological benefits to the Internet. By charging businesses more for Internet access than they charge smaller ISPs, wholesale ISPs effectively can use business users to cross-subsidize residential Internet users. This cross-subsidization, which already happens in public voice networking, is essential for keeping consumer Internet access price/performance reasonable.

The technical benefit is that concepts such as IP-based virtual private networks (VPN) and IP quality of service (QoS) will be much easier to deploy in a wholesale-model Internet. With more ISPs than there are Balkan states, creating an IP infrastructure that can provide QoS and flexible, independent VPNs is a major challenge; there simply aren't adequate standards for doing the job. With a few big players providing the whole underpinning of the Internet, a couple of vendor-proprietary architectures and some creative gateway products between carriers would solve the problem.

All of this requires rebuilding the thing we call the Internet. Too many people see the Internet as a network when it's really an application of public IP networking. Because we didn't have public IP networking in the early '90s, Web growth and Internet privatization forced us to create a network to run the Internet as an application. The WorldCom/MCI merger will, through its various ripple effects, provide the competitive justification to go back and do the job right.

This new deal in public IP will have a tremendous impact on our industry. In the first five years of the next decade, ISPs will spend between $200 billion and $400 billion ($40 billion to $80 billion per year) on public IP infrastructure. That's enough to swap out every device now installed in U.S. ISPs and make the vendor that gets the majority of the bucks the No. 1 player in the industry. There is no network market opportunity as large. The key issues that will drive that spending are support of flexible QoS, both as tiers of service in the Internet and features of IP-based VPNs, and the fast and effective positioning of public VPNs over connectionless infrastructures. For all the hype the press has displayed, few vendors have any respectable position in either of these areas.

Will public IP rehabilitate Multi-Protocol over ATM? Don't laugh — it could. Will players such as Lucent, which have no position in the Internet, emerge as major players in the public IP of the future? It's possible. Will Cisco, which still clings to traditional routing as the best answer to every problem, join competitors such as Ascend and Newbridge in announcing ATM/IP network architectures for the Internet? Even that is possible. What's even more possible is that everyone will say this is happening, whether it does or not.

Throwing a couple hundred billion bucks onto the table is hardly going to reduce the hype. If we're going to participate in the development of what might be our most important 21st-century resource, we as readers and editors, analysts and information grazers, will have to press relentlessly for details on how the new things we know are going to come actually will work when we deploy them — and it won't be easy.

Nolle is president of CIMI Corp., a technology assessment firm located in Voorhees, N.J. He can be reached at (609) 753-0004 or at tnolle@cimicorp.com.

able at the ECTF Web site (www.ectf.org). These documents are providing a clear and welcome road map to an open systems environment for the computer telephony industry. Numerous companies are in the process of designing applications and hardware that conform with these interoperability agreements.

Only now, with these conformant products beginning to emerge, has the ECTF actively begun to attract end users with the formation of its new user membership category.

Tom Zenisek
President and chairman
ECTF
Fremont, Calif.

Who you gonna call?

While I can understand the user's frustration depicted in Dave Kearns' column "Take a tech support number" (Oct. 27, page 24), the underlying problem is one of misplaced responsibility for software concerns. Perhaps the manufacturer's technicians would have been able to answer the user's questions about the hardware makeup of the system.

Go online for readers' comments on Mark Gibbs' letter to Janet Reno and other topics.
FIND IT ON FUSION 4832
www.nwfusion.com

Calling the hardware manufacturer for help with software trouble is a big mistake; the call should have been directed to Microsoft, but alas, I've no doubt where that would have led. It appears that the real solution is to get a real 32-bit operating system — like OS/2 Warp.

Lewis Rosenthal
Managing partner
Rosenthal & Rosenthal
Dix Hills, N.Y.

More on Reno

Of course there is a cost of having Internet Explorer loaded on your computer if you don't want it. First, there is labor inherent in adding anything to the initial load, and this causes an uptick in the computer's price. Small you may say, but multiplied by the number of machines we are talking about, it adds up.

Second, if you choose to "uninstall" Internet Explorer, you may not remove all the pesky parts. Who knows what changes may have to be made to get another browser to work properly? Third, the wording of the consent decree looks pretty clear to me. Internet Explorer certainly is not necessary to the functioning of the operating system and is sold separately from the retail Win95 editions I've bought, so it does not appear to be an integral part of the operating system.

Certainly DECwindows and Motif were far more integrated with and a part of the functionality of my VaxStation, but neither DEC nor I would claim that they were an integral part of VMS.

Jim Davis
Assistant research professor
Duke University Medical Center
Durham, N.C.

Teletoons

Phil Frank and Joe Troise baba@sfgate.com

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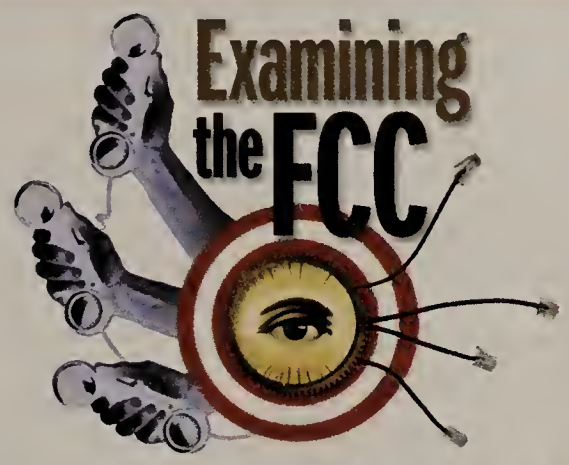


RANDEE LADDEN

Fixing the FCC

Continued from page 1
the lines suggested in a bill that has already been presented to Congress.

Above all, there must be a clearly laid out endgame with sunset provisions for the rules and various functions of the FCC itself.

Data, not voice

Until now, policymakers have focused on nudging the dominant incumbent local exchange carriers (ILECs) and interexchange carriers (IXCs) into each other's markets so there will be more than one source of local voice service.

But basic phone service isn't the problem. The U.S. already has the best and cheapest residential voice service in the world, and regulatory policies have made it a largely subsidized and unprofitable business. Competitive local exchange carriers (CLEC) would just as soon leave it to the incumbent monopolies.

"What we really want is ubiquitous IP dial tone," says Thomas Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. The demand is for advanced digital services, with voice just one of the applications that run on top of them.

The FCC must review its telecom act rules in 1998 to determine their effectiveness in fostering competitive markets and promoting the deployment of advanced services. The massive interconnection order should be revisited with different players, technologies and approaches in mind.

For example, interconnection and colocation rights should be extended to enhanced service providers and Internet service providers. This would off-load data traffic from the ILEC voice switches and provide a better Internet infrastructure. Similarly, extending local-loop unbundling provisions to the subloop level would enable CLECs to provide 3M bit/sec high-bit-rate digital subscriber line service at a small fraction of the cost of 1.44M bit/sec T-1 lines.

"Overall, there are way too many rules and way too many hoops for people to jump through."

Alfred Sikes, former FCC chairman, referring to interconnection agreements.

Mission-driven, not rules-driven

In order to develop this kind of responsiveness to market needs, the FCC has to transform itself from an organization driven by rules to one driven by a mission: competitive entry. Heavily regulated markets aren't going to be opened by applying even more elaborate regulation.

"The rules that are supposed to prevent bad things from happening also prevent good things from happening," says Ted Gaebler, president of the Gaebler Group in San Raphael, Calif., and coauthor of *Reinventing Government.* "They make it impossible to respond to rapidly changing environments."

The new commission needs to step back and consider whether all the FCC's detailed involvement has been effective. "There are risks in allowing entry too early, but the bigger danger is that it will happen too late," says Ken Gordon, a former state regulator and now senior vice president of National Economic Research Associates, Inc. of Cambridge, Mass.

Interconnection agreements between new entrants and ILECs should be left to negotiations as much as possible. "Overall, there are way too many rules and way too many hoops for people to jump through," says Alfred Sikes, president of Hearst New Media & Technology in New York and FCC chairman from 1989 to 1993. "It's a mess both legally and practically."

Competition prescription

What the FCC should do to fulfill the goals of the telecom act:

- **Rewrite the interconnection order with different players, technologies and approaches in mind. Extend interconnection and colocation rights to enhanced service providers and Internet service providers. Extend local-loop unbundling provisions to the subloop level so competitive local exchange carriers (CLEC) can offer more high-speed services.**
- **Be mission-driven, not rules-driven. The mission? Competitive entry. Let interconnection agreements be based more on negotiation and less on detailed regulations. Concentrate on enforcing those agreements. Implement mechanisms for rapid dispute resolution, including binding arbitration.**
- **Use sunset clauses that give CLECs only temporary access to network elements such as switches. Exempt new technologies from unbundling provisions and regulation in general.**
- **Urge Congress to pass legislation that would consolidate all appeals of FCC and state commission decisions in one district and circuit court.**
- **Learn from others. Study telecom laws being implemented in other countries, including Guatemala, Canada and the U.K.**

The focus on rules creates a rigid, coercive environment that is not likely to spawn the networks of the future. "It produces a lot of ill will," says Solveig Singleton, director of information studies at the Cato Institute, a Washington, D.C. think tank. "Relationships between buyers and sellers are supposed to be mutually beneficial, not adversarial."

Instead, regulators should concentrate on results, enforcing agreements that the two parties work out and booting into fast-track arbitration any party that falls short of contractual obligations.

Regulators also need to adjust the model they are using for measuring competition. Counting the number of companies providing traditional voice service is not the way to calculate whether a particular market is open.

"Competition is when I'm in business and there are no barriers to entry by others, so the threat of entry alone keeps my prices down," says Lawrence Gasman, president of Communica-tions Industry Researchers, Inc., of Char-lottesville, Va. This threat is always looming in a dynamic industry such as telecommunications, in which new technologies are always lurking in the wings.

Metaphorical mice

The Internet revolution is making deployment of new technologies imperative. The volume of Internet data traffic on public switched networks is doubling every quarter, and rapid network build-out is indicated.

However, a monopoly environment lacks the competitive threats that stimulate capital investment and spending on research and development. Consequently, the behavior of the ILECs today is in striking contrast to the norm among information technology enterprises.

"Both R&D spending and capital investment per telephone line have actually been flat or declining in the United States over the past five years, despite growing LEC profits and the emergence of the Internet industry," says Charles Ferguson, cofounder of Vermeer Technologies, Inc., an Internet software company acquired by Microsoft Corp. last year (see graphic).

The price/performance of network technologies in general has been improving at a rate of 30% to 50% each year. However, the cost of digital services such as T-1 and ISDN have held fairly steady for the past decade because of monopoly pricing. Worse, Ferguson says technology executives in New York and California have told him that the metropolitan-area bandwidth they need from the ILECs is sometimes not available at any price.

As a visiting scholar at the Massachusetts Institute of Technology, Ferguson recently published an extensive study, "The Internet, Economic Growth, and Telecommunications Policy." He concludes that the state ILEC infrastructure constitutes a major threat to the U.S. economy.

Competitors that are trying to lease unbundled network elements also report that ILECs' facilities are less than impressive.

"One of the reasons the ILECs have been trying so hard to keep people out of their operations support systems is that they don't want anyone to see the condition that things are in," says an official of one aspiring CLEC start-up. "Meta-phorically speaking, there are mice running around and the floorboards are loose. You don't really want to rent this place, but there aren't any other options."

One is left wondering why the IXCs are so afraid of such dinosaurs.

"These monopolies are very tired and very slow, so it's kind of a fair fight," says Mark Fowler, chairman of UniSite, Inc. and FCC chairman from 1981 to 1987. "If we let the marketplace work, competitors would figure out a way to go around or over or under the ILECs. It would take a lot of capital and patience, though, and people don't want the red ink, so they run to Washington for regulation."

Getting unbundling right

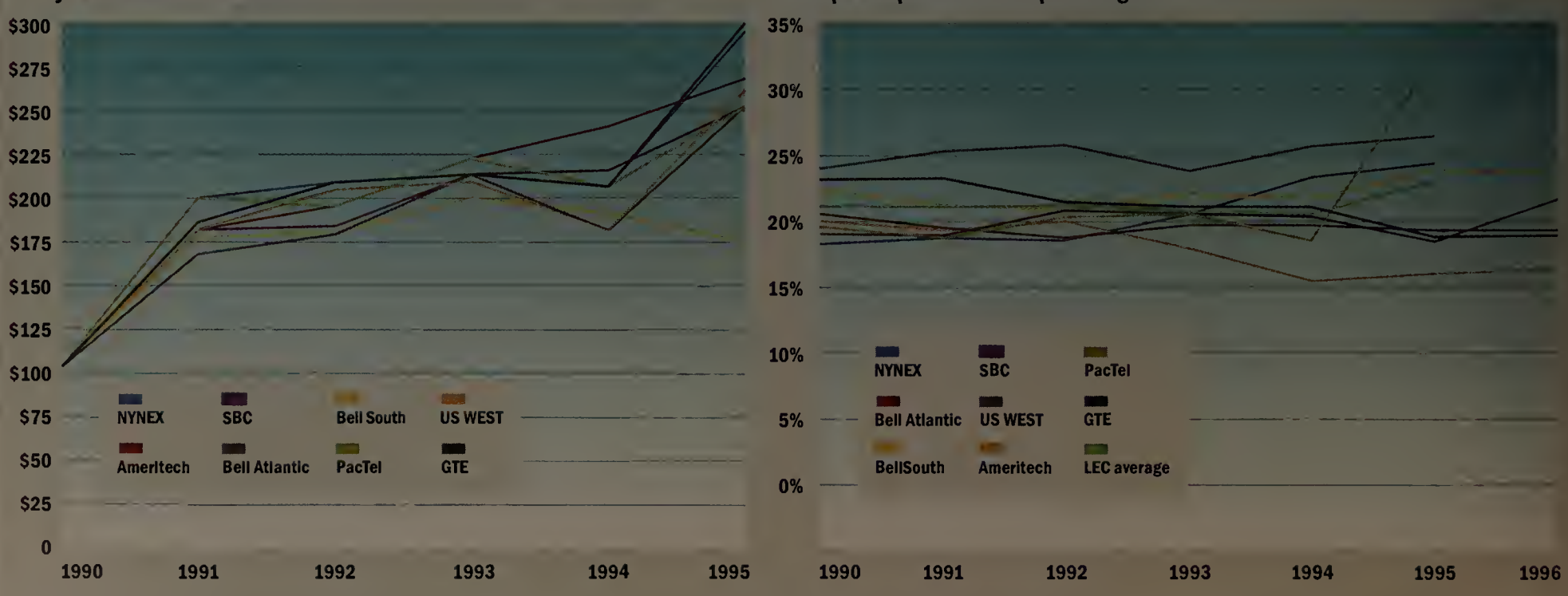
Washington has responded in part by mandating access to unbundled network elements. This mandate enables new entrants to put together networks that consist partly of elements in the ILEC infrastructure and partly of new value-added components.

Under the right conditions, unbundling will foster facilities-based competition as CLECs incrementally add advanced components and force ILECs to respond with their own enhancements. Under the wrong conditions, facilities-based competition will be stifled.

Current FCC unbundling rules have no expiration dates and include any advanced facilities the ILECs develop in the future.

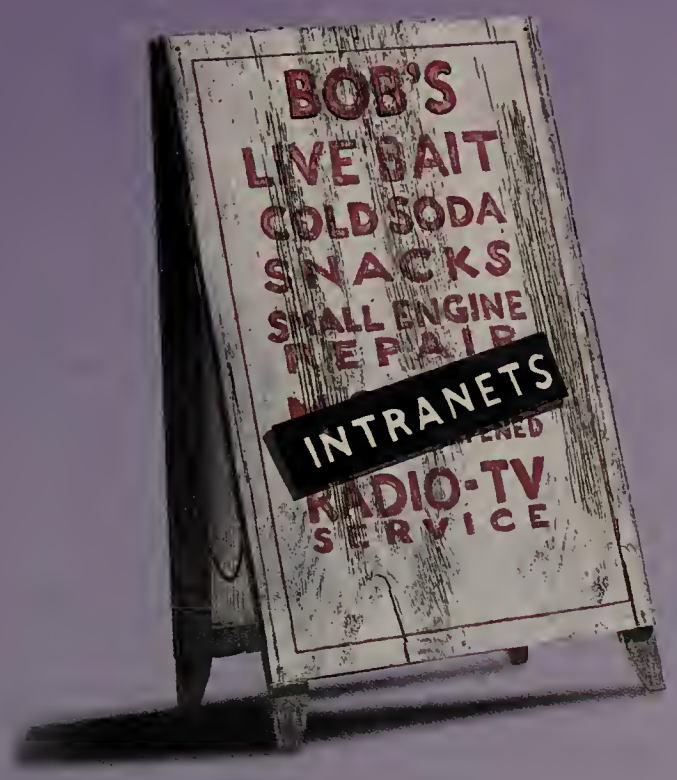
These conditions can combine to make CLECs permanently dependent on unbundling

NETWORK INVESTMENTS SHOW LECs ARE NOT FEELING THE PRESSURE



The total return on the stock of most LECs has been going up over the past five years, an indication that LECs are turning a profit. But the rate at which the LECs are putting money back into their networks is not keeping pace. As the chart at right shows, capital expenditures as a percentage of revenue have remained relatively flat. A notable exception is Pacific Telesis, which was spending at a steady clip prior to its acquisition by SBC.

SOURCE: "THE INTERNET, ECONOMIC GROWTH, AND TELECOMMUNICATIONS POLICY," BY CHARLES H. FERGUSON



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provisions and, thus, on ongoing regulation. They also leave ILECs with little incentive to develop new capabilities, because these advances would have to be shared with competitors.

The FCC should use sunset clauses that make CLEC access to certain network elements, particularly switches, temporary. This sends the right message to would-be competitors: Develop your own facilities if you want to stay in business. Because delay tactics can subvert sunset rules, mechanisms for rapid dispute resolution and enforcement have to be in place.

Any new technologies developed by the ILECs should be exempted from unbundling provisions. Critics say the ILECs then could move their own customers over to the new network elements and let the facilities that include the unbundled elements fall into disrepair. However, the rules could require that the ILECs maintain old facilities at the same level as before or divest them and let someone else take them over. The FCC also needs to resolve the issue of stranded costs, which are not included in its Total Element Long Run Incremental Cost formula for calculating prices of unbundled elements.

Delay tactics

It is easy to cast ILECs as the villains in this drama, but they were created in another era by government policies that viewed telephony as a natural monopoly, a service that can be provided most efficiently by a single company. Consequently, their core competence is manipulating the regulatory process, not technology advancement.

When faced with competition, such companies respond first with lobbying and litigation, not R&D and network build-out. After all, the monopoly position itself is a major part of the ILECs' equity and has to be protected like any other asset.

"When you end a monopoly, no business with one is going to just hand it over. The RBOCs are saying, 'You'll have to take it from me,' " says Doug Kinkoph, director of regulatory and legislative affairs for LCI International, Inc. of McLean, Va. "And they should. They are public companies with shareholders' interests to protect."

Consequently, every significant FCC rule is being appealed, and many state actions are being challenged. At the beginning of October, FCC lawyers counted 105 cases that had been filed this year in federal district courts around the country by ILECs attempting to vacate interconnection agreements hammered out in state arbitration proceedings.

"Getting an interconnection agreement signed is just the beginning," says Genevieve Morelli, executive vice president and general counsel for the Competitive Telecommunications Association in Washington, D.C. "It's a fight every day to get the terms of the agreement implemented."

Streamlining legal procedures

If the FCC waits for issues to wind their way through the legal process in traditional fashion, competition will be delayed for years.

"The lack of swift, certain and affordable dispute resolution is one of the greatest shortcomings we see in the competitive-access market," says Manning Lee, vice president of regulatory affairs at Teleport Communications Group, Inc. "It is just too expensive and time-consuming for small competitors to get regulators to make the

Interview with an expert

Alfred Kahn, the man behind airline deregulation, says expectations are overblown, but also calls the FCC an "arrogant bunch of bureaucrats."

As chairman of the Civil Aeronautics Board during the Carter administration, Alfred Kahn directed the deregulation of the airline industry and shut down the agency. Known as the dean of U.S. regulation economists, he also served as chairman of the New York Public Service Commission and is now a special consultant with National Economic Research Associates, Inc., an economic consulting firm in Cambridge, Mass. In a recent interview with Network World, *Kahn discussed the telecom act and the Federal Communications Commission's efforts to implement it.*

Should competition be emerging more rapidly under the Telecommunications Act of 1996?

Things are happening slowly, but public expectations are totally unrealistic. There is no way of knowing to what extent the local telecommunications business is a natural monopoly, a service that can be provided most efficiently by a single party. The market has to determine that. All the act can do is try to create opportunities for other parties to enter the market.

What kind of competition do you see emerging?

In time, increased availability of spectrum and improvement of digital communications technologies will provide viable alternatives for local access. Until then, competition is likely to be of two kinds. One is cream skimming, encouraged by regulatory policies that have kept charges to business users far above costs in order to provide subsidies to rural and residential consumers.

The other type is piggyback competition, in which new entrants just rebrand [incumbent local exchange carrier] services using unbundled network elements. But the general tendency among [competitive local exchange carriers] is to use as many of these elements as possible without investing in their own facilities. This will result in only very limited competition.

Piggyback competition is likely to focus on business customers, too, isn't it?

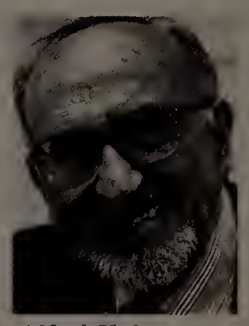
Of course. So-called consumerists have been even more unrealistic about the telecom act, asking when we'll see cuts in residential rates. We're not supposed to get cuts in residential rates under efficient competition; they ought to go up.

When are the interexchange carriers and ILECs going to shift the focus of their competitive efforts from the courts to the market?

The FCC has precipitated a lot of these appeals to the courts by presuming a competence, both legal and intellectual, that they don't have. They basically said, "We're going to set all the pertinent wholesale rates, and you'd better follow them."

Are you talking about their Total Element Long Run Incremental Cost pricing, for example?

Absolutely. They used hypothetical build-out costs instead of the real costs of what the ILECs have already built.



Alfred Kahn

Only an arrogant bunch of bureaucrats will tell you they can determine your costs by use of hypothetical models. These models are not based on projections that use costs the companies are actually incurring or are expected to incur. And no one is building a network from scratch in any case. Anyone who did would have to see the prospect of much higher rates of return than are built into these models.

What's the solution then?

It's better to use price caps and index them to go down a certain percentage every year. It gives the ILECs both an incentive to improve price/performance and an opportunity to recover their costs. The local companies have legitimate concerns about how they are going to recover billions and billions of dollars in stranded costs and legacy costs.

Can the FCC use your deregulation of the airline industry as a model?

The FCC should begin to plan for its own demise and has laid some of the foundation for this. But the FCC has a much tougher job than we faced at the Civil Aeronautics Board. It has inescapable obligations to oversee this process and can't just get out of the way. However, it's another thing to try and achieve deregulation by putting out thousands and thousands of pages of rules. Those whom the gods would destroy they first made mad, and it is madness for the FCC to think they can dictate rules in such fine detail. They should leave much more to negotiations that have to be completed under a tight time schedule.

— Susan Breidenbach

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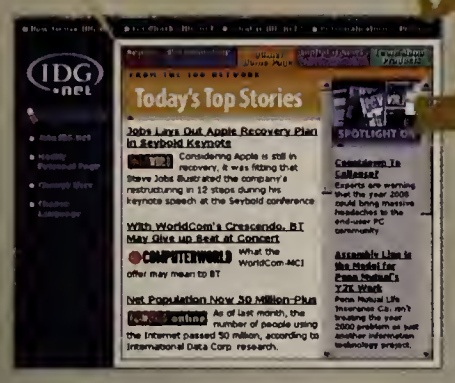

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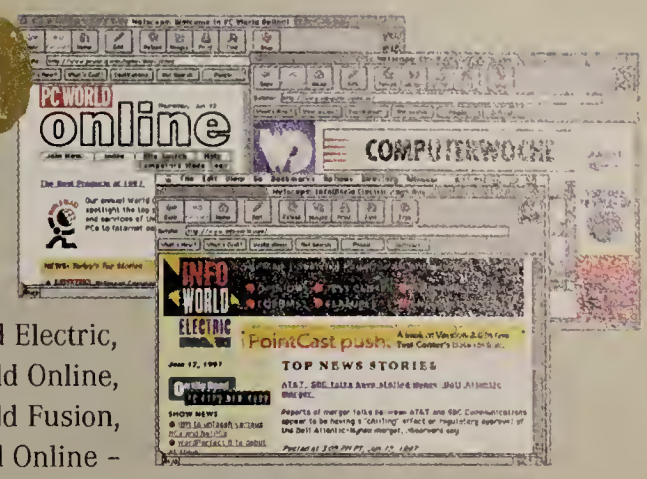

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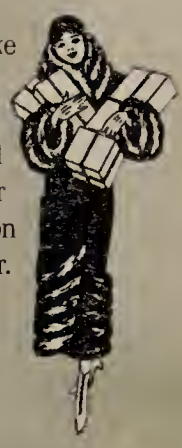

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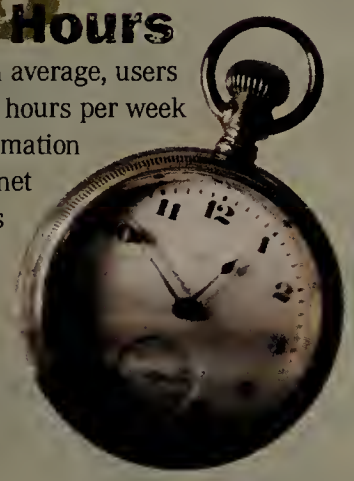

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ILECs behave. They can outspend anybody and delay competition indefinitely."

And quick dispute resolution "needs to be backed up by very prompt enforcement with significant penalties," adds Andy Lipman, a Wash-ington, D.C.-based attorney who repre-sents WorldCom, Inc.

The inherent inefficiency of legal processes is being compounded by venue shopping as plaintiffs look around for courts that might give them an advantage.

There are 93 federal district courts and 12 appellate courts that have jurisdiction over some aspects of the telecom act.

The district courts handle appeals from state regulatory bodies and constitutional challenges, while the appellate courts review FCC rules. The ILECs and state regulators chose the 8th U.S. Circuit Court of Appeals in St. Louis because of its reputation for backing states' rights.

With so many different courts grinding their way through the telecom act, inconsistent deci-sions and duplication of effort seem assured. To simplify matters, all appeals of FCC and state commission decisions should be consolidated in one district and circuit.

On Sept. 17, Sen. Herbert Kohl (D-Wis.) introduced legislation, the Court Consistency in Communications Act, which would do just that. His bill specifies the Washington, D.C. courts as the one venue that should hear all appeals of FCC and state commission decisions.

"This bill should create the necessary frame-work for predictability in the courts so that companies can shift their rivalry from the court-room to the marketplace," Kohl says.

The Washington, D.C. Circuit court has reviewed more FCC decisions than any other court and has the most expertise in telecommu-nications and administrative law. The IXCs and CLECs tend to favor Kohl's proposal, but some lawyers are worried about giving the FCC such a home-court advantage.

"There is a very real danger that the local court could gradually get captured by the agency," says Robert Corn-Revere, a former FCC chief counsel and now a partner at Hogan & Hartson in Washington, D.C.

But if regulation is truly being phased out with an explicit endgame that includes sunset rules and other provisions, there wouldn't be much to capture.

Lessons from abroad

Telecommunications deregulation is a glob-al movement, and there is a lot to be learned from the experiences of other countries. Some are further along than the U.S. and provide interesting case studies for FCC policymakers.

Pablo Spiller, a professor of international business and public policy at the University of California, Berkeley, has compared deregula-tion efforts in Australia, Chile, Guatemala and New Zealand. He found that facilities-based competition can develop in a variety of circum-stances as long as basic interconnection rights exist and are enforced.

"There's no way government agencies can keep their arms around all this. The FCC is busy regulating horses and buggies, while we've moved on to some-thing else."

William Frezza, Adams Capital Management

Before the U.S. telecom act was ever passed, the record in Chile and New Zealand already showed that using the courts to resolve inter-connection disputes was too slow and unpre-dictable. Australia and Guatemala have had much better results with binding arbitration.

Guatemala should make an interesting con-trast to the U.S. over time because its new telecommunications law also was enacted in 1996. Its interconnection rules guarantee cost-based access to certain specific services that can't be extended as new technologies develop and include limited unbundling provisions that expire according to a sunset clause.

"It's very striking how simple the rules are compared to the U.S. telecom act," Spiller says.

Canada and the U.K. also are taking differ-ent approaches from the U.S., particularly with regard to unbundling. The U.K. is seeing signif-icant facilities-based competition with no unbundling at all, although this is partly because its cable TV operators are forced to offer telephony services.

Canada makes a better contrast because its infrastructure is so similar to the one in the U.S. There are no local resale discounts, so Canadian CLECs have to pay retail rates for any services they want to use.

Only three network elements — access to numbers, access to directory listings and local loops — have to be unbundled by ILECs, and all local loops that are not in "high-cost areas" will be exempted after five years.

As in the U.S., prices for unbundled ele-ments are based on long-run incremental costs. However, the Canadians add a 25% premium to cover the incumbent's joint and common costs, a major sticking point for U.S. ILECs.

Also, Canadian CLECs don't get access to the incumbent's operation support systems, something a lot of U.S. CLECs say they can't do without. And unlike most states, Canadian regu-lators have been willing to bring residential rates up to market levels.

"We thus have a competition here between national telecommunications policies," says Henry Geller, a former FCC general counsel who is now a communications fellow at the Markle Foundation. The Canadian interconnec-tion rules go into effect on Jan. 1, 1998. The FCC would do well to keep a close eye on how they play out.

The sun is setting

Businesses and even consumers are getting increasingly impatient as they see the growing gap between the telecommunications services they could have and the ones they have to settle for. Entrepreneurs are champing at the bit, eager to imple-ment their inventions and ideas, and investors are standing by, ready to back them.

A regulatory regime designed for a long-gone era blocks the way.

"We created a free-market policy [in the telecom act], but we left the old monop-oly agency in place," laments Rep. Billy Tauzin (R-La.), chairman of the House telecommuni-cations subcommittee.

However, the telecom act authorizes the FCC to do what is necessary to promote the deployment of advanced services, even if it means overriding other provisions of the act.

For example, the FCC could start on a new deregulatory course by forbearing on Section 214, which forces carriers to receive FCC autho-rization before they can offer innovative new services.

The sun is going to set on the FCC in any case, because rapid technology advances are making regulation increasingly futile and dangerous.

"It is inconceivable that any government agency can keep up with all these developments and not hold things back," Gasman says. "The FCC is a drag on the marketplace and will con-tinue to be as long as it stays in its current form."

If the FCC persists on its present course, the sheer momentum of technology advancement will take the industry beyond its grasp.

"We're going to see regulatory bypass, the way we did with the Internet," says William Frezza, a general partner with Adams Capital Management, of Yardley, Pa. "There's no way government agencies can keep their arms around all this. The FCC is busy regulating horses and buggies, while we've moved on to something else."

Breidenbach is a consultant and freelance writer in San Mateo, Calif. She can be reached at sbreiden-bach@usa.net.

Get more online:

Part One of this series, which looks at whether the FCC has the re-sources it needs to accomplish its goals.

Part Two, which examines the ambiguities built into the telecom act and the effectiveness of the FCC's decision-making processes.

The complete version of our interview with Alfred Kahn, who presided over deregulation of the airline industry.

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***IntraNet* magazine**
July and August, 1996

Network World
Contents page, Nov. 11, 1996
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REVIEW

Network Management Series

Keeping Windows clients in hand

PalmSun Software's KeepCool provides affordable desktop management with Web-based software distribution, hardware and software inventory.

By Dennis Williams

Workstation management — you can't get away from it, but you can make it easier. PalmSun Software, Inc.'s KeepCool simplifies many management tasks required of network administrators, including software distribution, hardware and software inventory, and desktop configuration and management.

The KeepCool management suite uses software agents on Windows 3.X, 95 and NT computers. The agent loads into memory upon system start-up, so a workstation doesn't have to be logged in to the network to be managed by KeepCool.

An administration console recognizes all clients that have the agent installed. Once all the workstations are discovered, you can create groups to make it simpler to assign administration tasks to many computers. For example, you could upgrade an application on all sales department computers or group computers by Windows version, processor type or location.

You cannot, however, import existing groups from an NT domain or from a Novell Directory Services tree or bindery. One reason for this is KeepCool manages workstations based on the IP address, not the user logon. And while it would be useful to be able to import existing groups, creating new groups for a small to midsize network doesn't take much time.

Our test groups were simple: The computers were grouped on Test Rack 1 and Test Rack 2.

We tested all of the actions you can perform on client workstations (see table). Actions can be executed on any or all clients, and you can execute them immediately or schedule them to run at a defined time. The scheduler is handy for time-consuming tasks such as hardware and software inventory, as they can be set to run overnight.

You also can specify requirements that must be satisfied in order for an action to execute. For example, you might want to send a message to all users asking them to close their e-mail program while you upgrade the e-mail server, or you might exclude Windows 3.X users from registry management tasks.

Web-based software distribution

KeepCool supports software distribution from either a file server or a Web server.

KeepCool first takes a snapshot of a single, sample client and records all items that might be modified during the installation of a new application, including directory structures, system files, program groups and the registry.

Next, you install the new software on the sample client using its own installation routine. Afterward, KeepCool automatically takes another snapshot of the system.

The second snapshot includes the updates the software must make to each target system as part of the distribution. The wizard then prompts for a file name to use to save the distribution package on the file or Web server.

If you use a Web server, it must be Internet Information Server 3.0 running on Windows NT 4.0.

Each distribution package contains the program files and a script that installs the files, creates program groups, adds icons to the desktop and edits system files. We were pleased to discover that no hand-coded scripts were needed.

Moving a distribution package to a client is accomplished the same way as executing other actions for client workstations; you select the package, you select the workstations that are to receive the package, and then you select when you want the package to be delivered and installed (immediately or at a scheduled time).

Remote users can pull selected distribution packages from a Web server as needed. There is no security built in, however, so you should place the files in secured areas on your storage servers where only approved users can access them.

Inventory and remote management

KeepCool includes two inventory components: software and system inventory. The system inventory collects details on the computer, including hardware configuration, Windows version and network information. The results are displayed in a treelike structure, similar to Windows 95's Device Manager.

The software inventory component looks at the modules and applications installed on each system. It tracks software using predicates, which are contained in a large file full of software information that KeepCool maintains. You

KEEPCOOL 3.1

Net Results

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Pros
- ▲ Low cost
- ▲ Server-Independent

Cons
- ▼ Lack of support for non-Windows clients

Scorecard

Software distribution (20%)	9 x .20 = 1.8
Inventory (20%)	8 x .20 = 1.6
Remote desktop management (20%)	8 x .20 = 1.6
Flexibility and ease of use (20%)	9 x .20 = 1.8
Enterprise scalability (10%)	6 x .10 = 0.6
Installation (5%)	10 x .05 = 0.5
Documentation (5%)	9 x .05 = 0.5
Total score	8.4

Individual category scores are based on a scale of 1–10. **Percentages** are the weight given each category in determining the **total score**.

KeepCool primary administration functions

Agent configuration	Analyzes and configures the remote agent
Remote command	Executes a task on remote clients
Reboot	Restarts a client
Screen snapshot	Saves Windows screens
Time synchronization	Synchronizes client clocks to within approximately one second
Whodo	Displays and kills tasks on remote clients
Registry database	Manages the registry
Groups and icons	Displays, modifies and adds groups and programs to the Windows Program Manager or desktop
System backup	Creates a backup of system files
System files	Edits system files such as SYSTEM.INI, WIN.INI and AUTOEXEC.BAT
Software inventory	Provides a report of the software installed in a client
System inventory	Provides a report of the hardware installed in a client
File transfer	Transfers files between clients and gives full access to remote hard disks
Talk	Allows several users to "converse" at the same time

can add your own predicates to recognize new pieces of software or download new predicate files from the PalmSun Web site.

The information gathered from the system and software inventories can be stored in KeepCool's internal Interbase database via a feature called File It. A query feature allows you to retrieve stored information, but your ability to export data from the KeepCool database is limited.

We found KeepCool especially useful for remote configuration tasks, such as adding new icons to the desktop, adding program groups and editing system files. The ability to view critical system information without having to be physically present at a user's computer is a great feature.

Simple installation

Installing KeepCool couldn't be simpler. You install the administrator software on just one of the clients, and the agent on all managed computers.

You also can install the Web server extension on each client, which allows you to enable software distribution over the Internet or company intranet.

You need to have TCP/IP installed on all target systems, and you need to know the system parameters your organization is using for Windows Internetwork Name Service, Domain Name System and IP hosts files.

The administration utility hung up on us several times when we ran it from our NT server, but when we started using a Windows 95 computer as the administration console, the problems went away. PalmSun was unable to explain this behavior.

The administrator software must be installed manually from the CD-ROM, but agent software can be set up to install automatically on the clients when they log on.

We tested a beta version of KeepCool 3.1; the final version should be available by the time you read this.

KeepCool is server-independent and runs over TCP/IP. It supports existing standards, including SNMP, Desktop Management Interface and Open Database Connectivity.

The bottom line

KeepCool provides an easy-to-use and affordable desktop management application. But it is not all-inclusive. It leaves out capabilities such as virus protection and does not provide device management, so you'll have to use something else for your hubs and routers. And it won't page or e-mail you in the event of a critical mishap such as a server failure.

But given its reasonable price tag, KeepCool could be just the trick for those looking to save time managing workstations and the applications running on them.

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products.

Williams is a freelance writer and network consultant, based in Alpine, Utah. He can be reached via e-mail at dennis@productreviews.com.

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As a network IS professional, your end-users are continuously finding new ways to leverage your network for business advantage. The resultant traffic load is rapidly pushing LAN and WAN backbones to the breaking point. At the same time you are struggling to support the high QoS demanded by new applications such as web browsing, desktop conferencing and collaborative groupware.

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ATM Integration: Discovering How ATM Fits In Your Network is designed to help you discover ATM's fit into your local and wide area network architecture. ATM Integration explores the capabilities and benefits of ATM and carefully examines its interoperability with multiple legacy environments including ethernet, token ring, FDDI, frame relay, voice and IP.

The seminar is taught by leading ATM expert Cathy Gadecki of TeleChoice, Inc. Cathy is co-author of the popular *ATM For Dummies®* from IDG Books Worldwide with over 10,000 copies sold in its first six months. You will learn more about ATM, its uses, alternatives and criteria for evaluating ATM vendors. You will leave the seminar with the information needed to help you decide whether to and how to implement ATM in your own enterprise network.

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5. Explore how you can use ATM in your WAN to unplug your frame relay bottlenecks and increase Internet connection speeds.
6. Uncover the facts on using ATM to carry voice traffic.
7. Investigate practical strategies for transitioning your current network to a LAN or WAN ATM backbone.
8. Compare and contrast ATM to other solutions for the campus and wide area networks.
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Management Strategies

Dealing with budget cuts

Tips for pulling off a network project when its funding gets slashed.

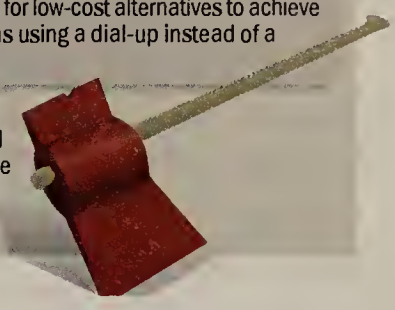
CHECKLIST FOR SURVIVING THE BUDGET AX

Insource: See whether the beneficiaries of the project can help foot the bill or whether funds can be redirected from a different budget line item.

Prioritize: Look for ways to scale back the project, such as cutting certain features.

Find another way: Search for low-cost alternatives to achieve your project goals, such as using a dial-up instead of a dedicated line for e-mail.

Sell the Idea: Make sure internal users understand the business benefit of the project; prove it is cost-effective.



By Daniel Dern

One of the hallmarks of good managers is the ability to deal with surprises. One of the most disconcerting surprises is learning that the budget for a major network upgrade or service rollout suddenly and dramatically has been cut.

"When the budget suddenly shrinks, experienced managers look first for less expensive ways to get the same resources," says Michael Silton, president of The Virtual Corp., a network software consultancy in Westford, Mass.

Start by "insourcing, see whether the project's intended users can assume responsibility for the budget or resources," Silton suggests. "Then start looking outside the company for resources that are cost-efficient — meaning less expensive than internal resources."

The next step is heavy prioritization, advises Mark Kolenko, manager of Internet and communications in the strategic IT planning division of a major Northeast utility.

"Decide what the users can live without in terms of functionality, what can be delayed to the next quarter or year," Kolenko says. High-visibility items such as security, maintenance and support don't usually get cut, but look for less critical features that users can get by without, he says.

Another approach is to find lower cost ways to provide key resources. In Internet/intranet-related projects, telecommunications and Internet service provider charges tend to dominate costs.

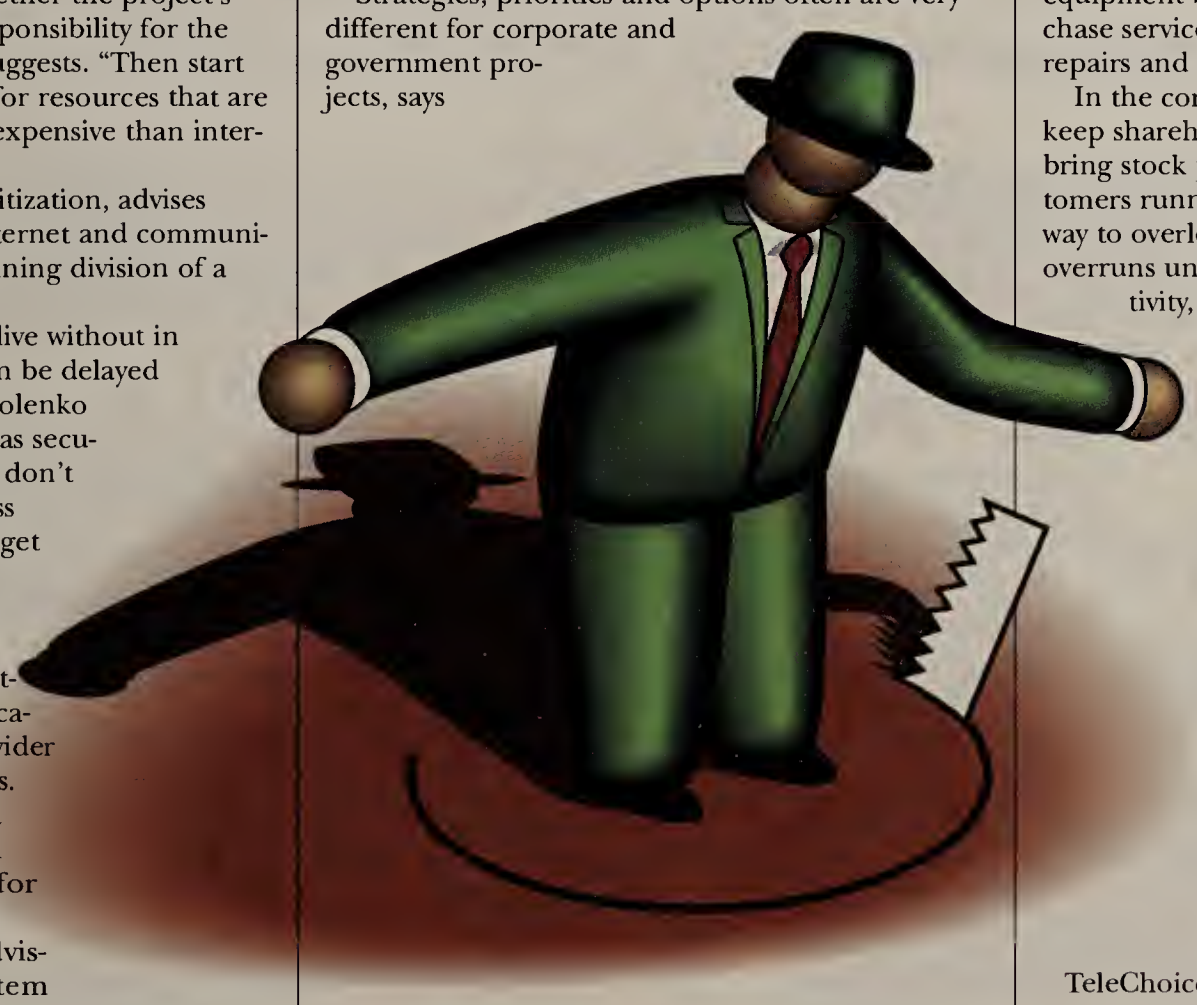
"If your primary need is a public Web page and e-mail access, most ISPs can front for your company so customers can find and reach you," advises Bob Webber, a senior system and network administrator for PictureTel Corp.'s research department in Andover, Mass.

For multisite intranets, "consider using bandwidth-on-demand routers or a dial-up mail delivery system. But carefully monitor actual use so that you know when to change to a full-time connection," Webber says. "If you have any Unix experience, consider using older, slower PCs running FreeBSD or Linux as routers and Web and [File Transfer Protocol] servers."

Don't give up or postpone a network project if you can keep it going, Webber says. "Once you have something up and running, managers will convince themselves of its usefulness and raise the priority of Internet/intranet connections in future budgets."

When anticipated funding is cut or consumed, look for other sources of funding and determine which is more important to the customer: functionality or staying within the budget.

Strategies, priorities and options often are very different for corporate and government projects, says Barry Nelson, a former senior system engineer at BBN and now a Boston-based technology lawyer.



"There are often different colors of money for government purchasing: typically [research and development], operations and maintenance, and capital equipment," Nelson says. "If your system was built with R&D funding, it may be difficult to chip in from an [operations and management] budget to pay for extra features. But those extras could be painted to look like bug fixes." Capital equipment budgets generally can't be used to purchase services, so managers may need to devote repairs and upgrades to a separate fund, he adds.

In the corporate world, the obvious goal is to keep shareholders happy. Public scandals could bring stock prices and morale down and send customers running, so management may go out of its way to overlook system inadequacies or budget overruns until there's a serious impact on productivity, Nelson says. This can cause finger-pointing and scapegoating, so be sure to keep your eye on problems and resolutions and make candid reports to your own management.

Of course, the ultimate budget reduction is the complete discontinuation of a project.

While this frees your time from responsibility for the deliverables, having a project killed may reflect badly on you. If you believe the project was worth doing in the first place, you may want to attempt to revive it.

"Usually, when projects get killed it's because the corporation — including the end users — don't understand its business value," says Debra Mielke, senior consultant at TeleChoice, Inc., a data communications consultancy in Verona, N.J.

"Network managers need to realize their customers — the end users and other departments of the corporations — sometimes need to understand the impact of network projects on the business as a whole. You have to sell internally too," Mielke says. She suggests formulating a plan to help users understand why your project is important to them and their business.

Dern is a freelance technology writer based in Newton, Mass. He can be reached at ddern@world.std.com.

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Highlights of December's Intranet Magazine

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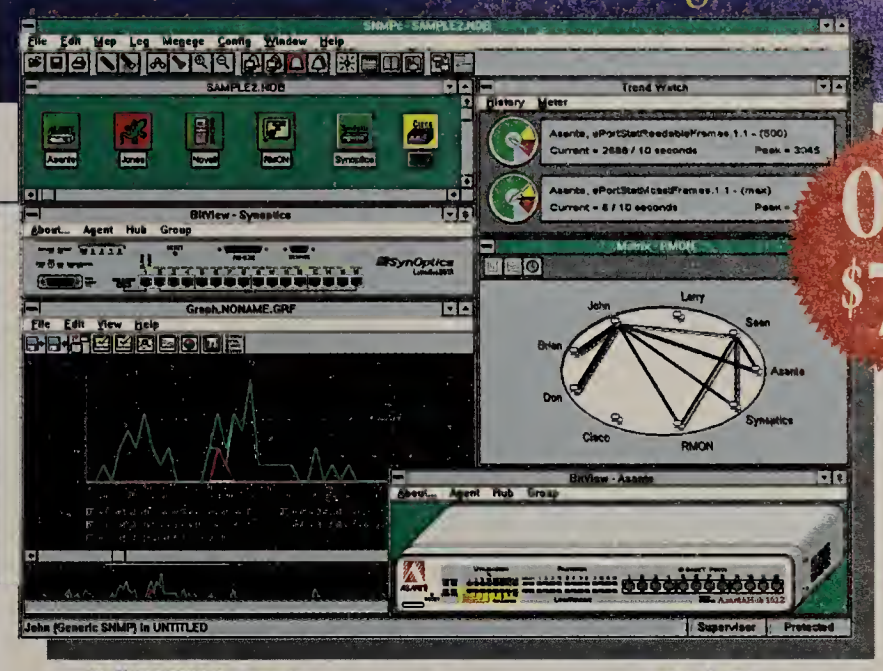

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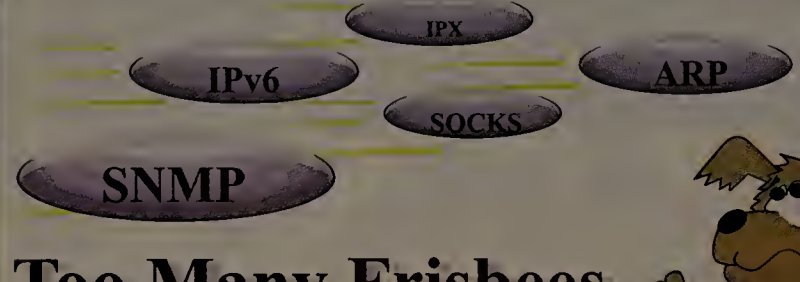

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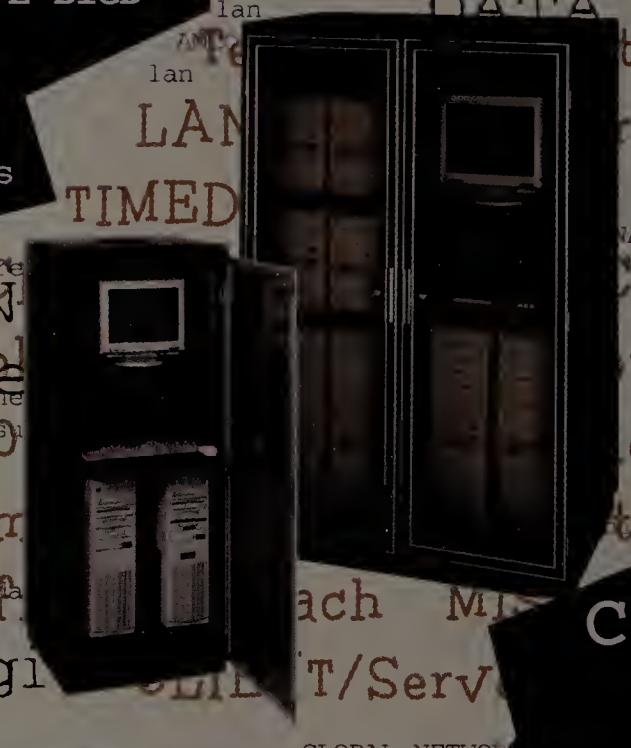

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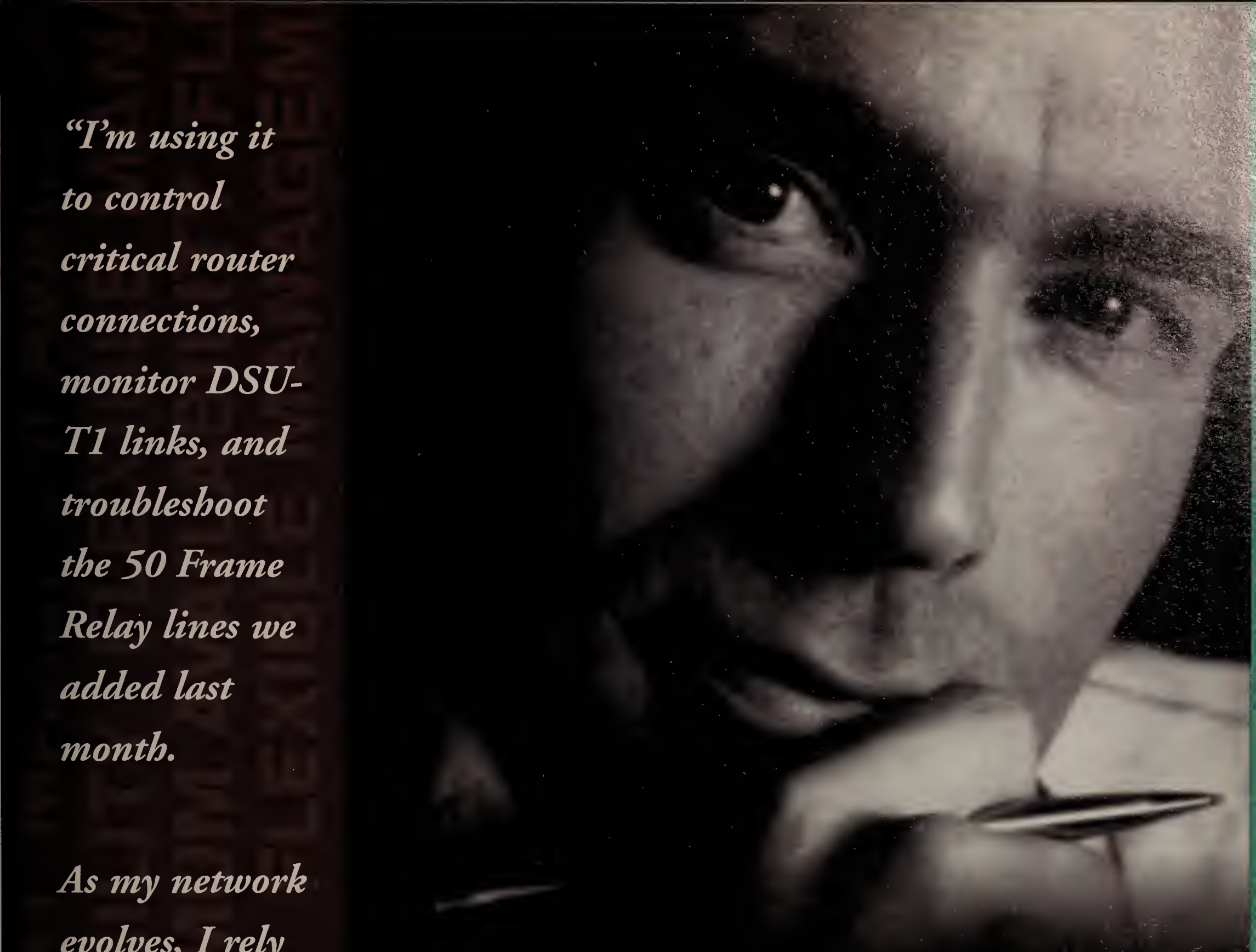

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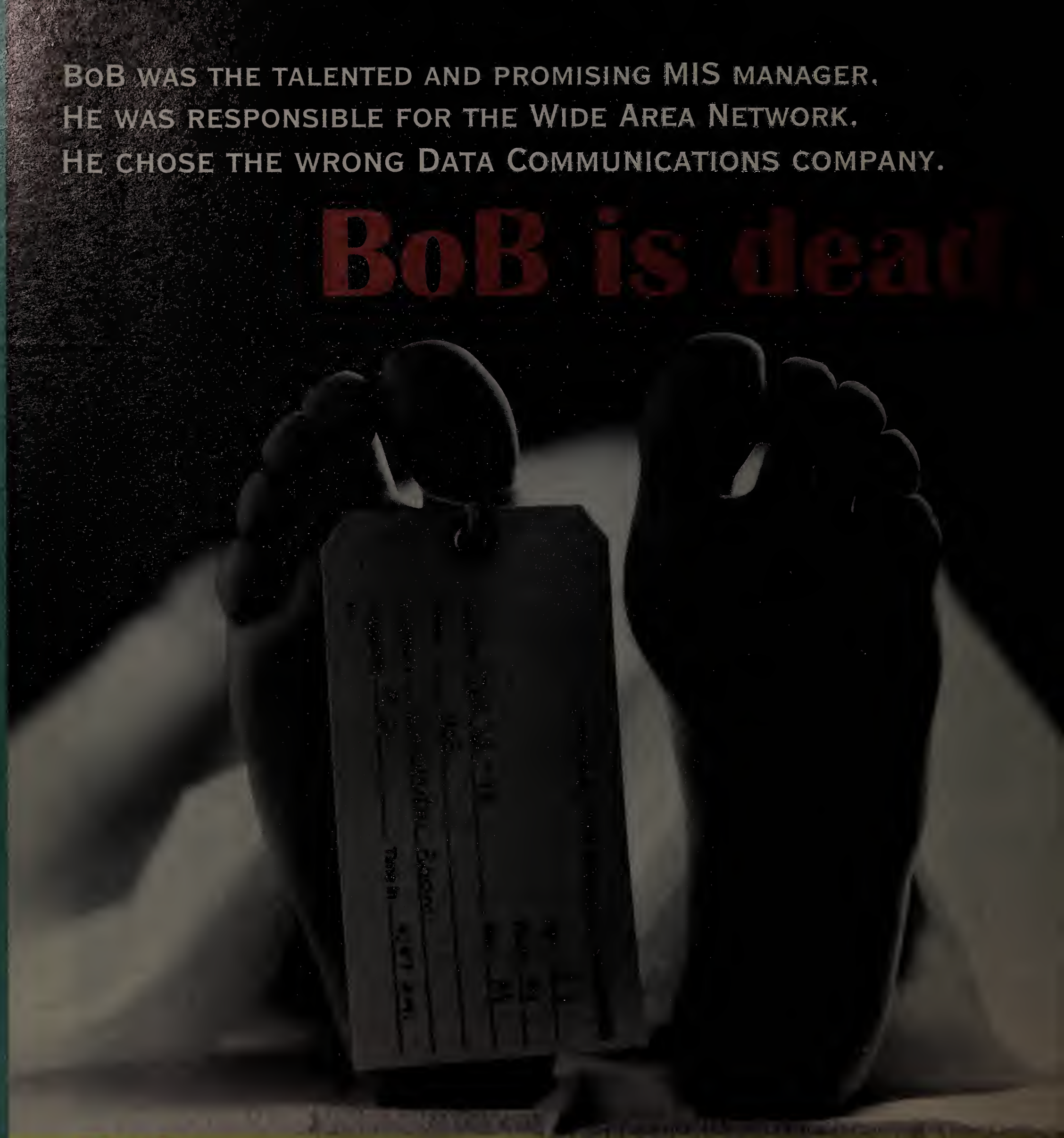

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HP

Continued from page 1

analysis data easily accessible by management applications.

The warehouse will include tools that allow users to replicate trend, event and topology data from a flat file structure into a Microsoft Corp. Open Database Connectivity (ODBC)-compliant relational database. It also will include SQL query and reporting utilities.

The flat file structure is and will continue to be used for operational purposes — such as reactive fault management — while the relational database will store historical trending data for planning purposes, said Rick Roeling, NNM data framework architect for HP's OpenView Software Division.

"The [warehouse] becomes a repository of analytical data and an enabler for proactive management," Roeling said in an e-mail to OpenView users. "By using ODBC software, NNM will support a number of commercial database products for use as the [warehouse]."

The data warehouse will be the first ODBC-compliant data store for NNM, Roeling said. It will support Oracle Corp. 7.3 and 8.0 databases, as well as Microsoft SQL Server 6.5 and, possibly, 7.0. HP also plans to support Sybase, Inc.'s SQL Server 11.0 and Informix Corp.'s Online 7.2.

NNM currently supports Computer Associates International, Inc. CA-Ingres and Oracle Corp. databases.

TAKING INVENTORY

HP plans to support these databases under Data Warehouse:

- Oracle 7.3 and 8.0
- Microsoft SQL Server 6.5 and 7.0
- Sybase SQL Server 11.0
- Informix Online 7.2

For customers who are not using a commercial relational database, the next major release of NNM will feature a lightweight, embedded database that can be used as the data warehouse.

The data warehouse is HP's second stab at building a data repository for OpenView. Four years ago, HP disclosed plans to develop a common data repository for the management platform but it never came to fruition.

The warehouse, however, is different. The common repository was intended for operational, reactive use, while the data warehouse is for proactive planning purposes, Roeling said. Pieces of the common repository have been submitted to the Desktop Management Task Force for inclusion in the Common Information Model (CIM) data schema for Web-based management. HP has pledged to support CIM in OpenView.

OpenView users say the data warehouse looks like it might be the first CIM deliverable from HP. "A lot of customers are buying products to do this very thing, so it looks like a hole they're trying to fill in the NNM suite as well as perhaps take those steps toward CIM," said Sandy Potter, network specialist at Air Products and Chemicals, Inc., of Allentown, Pa. "I'm hoping that is the case."

But analysts, who likened HP's plan to Cabletron Systems, Inc.'s data warehouse initiative (see story below), said the HP plan is still lacking.

"My concern is the same as it is for most of these vendors that are trying to be more data management savvy," said Theo Forbath of Northeast Consulting Resources, Inc., in Boston. "You can collect all the data in the world, but if you don't help your customers glean real knowledge or information out of it, I don't know if you're just causing additional data overload."

HP claims the data warehouse will allow customers to use report design applications, such as Microsoft Excel or direct SQL, to generate reports and analyze exported and aggregated data. ■

FACNET

Continued from page 1

network very much in doubt.

The culprit is the innocuous-sounding Defense Authorization Bill, which includes an amendment to eliminate the FACNET mandate. President Clinton is expected to sign the bill.

COMDEX

Web through the heart

Twenty-nine value-added networks (VAN) are certified to deliver FACNET bid information. They retrieve it from two hubs managed by the Defense Information Systems Agency.

But officials in charge of the government's electronic commerce program say the World Wide Web has made the EDI-based FACNET obsolete. "FACNET was established two and a half years ago when the Web was just a glimmer, but now the Web is emerging as a solution," said Mark Adams, director of the Life-cycle Information Integration Office, based in Falls Church, Va., where the government is revamping its electronic commerce strategies.

While mandatory use of FACNET will end, agencies that want to can still send requests for quotes through it, Adams said.

A government panel called the Electronic Processes Initiative Committee plans to come up with a plan on how electronic commerce in the government will be accomplished by March of 1998.

However, there has been open rebellion in the government ranks against FACNET.

STAN BAROUH

"FACNET *is no longer a requirement. It's just one methodology for transmission of procurement information," said Mark Adams, director of the Life-cycle Information Integration Office.*

The Defense Logistics Agency (DLA), which each year buys $9 billion in goods, would rather continue using its own network, called the Defense Automation Addressing System Center (DAASC).

"We were already doing DAASC when FACNET started," said John Christensen, procurement systems chief for DLA's C/EDI team. He added that DLA would feel "restricted" using it because so few vendors are registered in the FACNET contractor database. More than 300,000 suppliers do business with the government, but only 19,000 are registered with FACNET.

One VAN provider claimed FACNET's open bidding makes some people in government uneasy. "The federal government doesn't really want to be held accountable, especially when they're playing games with the money," said George Chisa, president of Simplex, Inc.

With mandatory FACNET use ending, agencies are likely to move further into Web-based procurement — a blessing and a curse to VANs and their subscribers. "FACNET is relatively convenient, and if we have to search the Web for business this will be a full-time job by itself and cause a lot of inconvenience," said Gene Chafe, general manager at Senske Pest Control, Inc., a company that has won two substantial contracts using FACNET.

All's fair

FACNET bid information is only available through VANs that charge service fees. "I don't know if FACNET is fair and equitable to everyone," said Claudia Holtz, a sales assistant who uses FACNET at Mitchell Lewis & Staver Co., a Wilsonville, Ore.-based wholesale distributor of pumps, compressors and agricultural equipment. "But I hope whatever they come up with next is fair," Holtz said. ■

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Cabletron opens management warehouse

Cabletron Systems, Inc.'s data warehouse will be open and work with Web-based data models currently under development, company officials pledged last week.

As expected, Cabletron unveiled a data warehouse for its Spectrum management platform along with a slew of applications to take advantage of it (*NW*, Oct. 13, page 83). The warehouse is in-tended to make enterprise management more proactive by correlating management data from multiple sources and making it readily available to Spectrum applications.

Cabletron also plans to make the warehouse easily accessible to third parties by publishing interfaces to it over the Web, said Bill Tracy, director of engineering for Spectrum development. Cabletron vowed to make the data warehouse compatible with the Desktop Management Task Force's (DMTF) Common Information Model (CIM), a data schema for representing managed objects on a Web browser.

"We'll comply and work with CIM," Tracy said, adding that Cabletron is helping to define the specification. Cabletron also believes its warehouse can serve as an interim CIM warehouse until the DMTF or vendors involved in the Web-based Enterprise Management initiative tackle something like it.

Applications for the Cabletron warehouse include enterprise accounting, network service provider billing, enterprise reporting, service-level management, trend analysis, capacity planning and data mining.

"Right now we're quite good at responding to outages and fixing problems quickly, but we want to move it up to the next level and start avoiding problems," said Dennis Mitchell, vice president at Bank of America, in Concord, Calif. "We see the warehouse as a tool to help us do that by helping us track problem trends, identify areas that are weak, and identify patterns and minor problems that may be building into a large problem."

The warehouse will ship in two phases beginning in the first quarter of 1998. Shipping will conclude in the third quarter of 1998. The warehouse costs $30,000, and applications cost $7,500.

–Jim Duffy

Backspin

Conspiracy theories: Aliens, CIA, Hoffa and Microsoft


Mark Gibbs

Conspiracies are popular these days: abductions by aliens, the CIA shooting JFK, the Mob burying Jimmy Hoffa in the pillar of an overpass.

In our business it's the "Microsoft owns the press" conspiracy that amuses me most (see News Editor Doug Barney's editorial on the same subject, page 44). I recently wrote a column suggesting the Department of Justice should keep its hands off Microsoft (*NW*, Oct. 27, page 75). My position generated many letters indicating a 50/50 split on the issue.

What surprised me was that many of you who disagreed with me weren't content to simply say I was wrong. Consider the following letter from Mr. Fischer:

Mr. Gibbs: Would I be correct to assume the Gibbs Institute is Microsoft-funded?

Mr. Fischer, really. This is an outright slur. Do you think I could stay in business as a professional writer and consultant if I surrendered my objectivity to any vendor?

Another irate reader broke his ire into bullets, thankfully of the typographical kind.

Dear Mr. Gibbs: To comment on your column:

- *It is sickening that columnists with an MS bias think computer professionals are a bunch of geeks with minimal understanding of anything.*
- *It is sickening to see that people like you ignore the feelings of at least 80% of programmers and developers who have despised MS for a long time.*

WILL YOU AND OTHER MS LOYALS PLEASE TRY TO ENVISION A WORLD W/O MS OR SUN OR NOVELL OR ANY OTHER MONOPOLY, AND LET PEOPLE CREATE AND FIND THE RIGHT WAY.

Mr. Fischer, the author of the above (who will remain unnamed) and a number of other readers think that I and many other journalists are part of some sort of conspiracy. Well, in fact, we are. A conspiracy to be honest about the market and the vendors with which we deal. And do you know what it is that impresses me, and I suspect many other writers, about Microsoft?

1. Microsoft software development is amazing. Just consider something like Word. How many gazillions of lines of code are in it? And it works!

2. Microsoft software is robust. Sure, Microsoft software bombs sometimes but, I would argue, no other vendor produces complex application software that is any better.

3. Microsoft products have a large scope. And don't talk to me about bloatware and useless functionality in Word and other Microsoft products. What you don't use I probably do and vice versa.

4. Microsoft keeps pushing the technical boundaries. And please note that, as I have written before, I don't like ActiveX. I think Java is far more elegant and a much better fit.

Because of its success and consequent market dominance, Microsoft is monitored closely by the press and judged very harshly. Every mistake (and it makes them frequently) is analyzed and reported. But it just so happens that the company is very, very good at what it does.

Mr. Unnamed refers to a "right way," a path to computing nirvana that isn't defined by a major vendor. This was a topic alluded to in many messages. It will never happen.

You can't have a dynamic, rich industry that doesn't give rise to magnates, people who focus and drive the industry, and dominant companies that learn how to market exceptionally well.

I think the real conspiracy is a conspiracy against success. The conspiracy is among those who don't understand that major industries are driven by aggressive innovators and entrepreneurs.

Wish Microsoft away or wish it controlled by inappropriate laws and you wish away the kind of drive and creativity that makes America great.

Send your conspiracy theories to nwcolumn@gibbs.com or tip me off at (800) 622-1108, Ext. 7504.

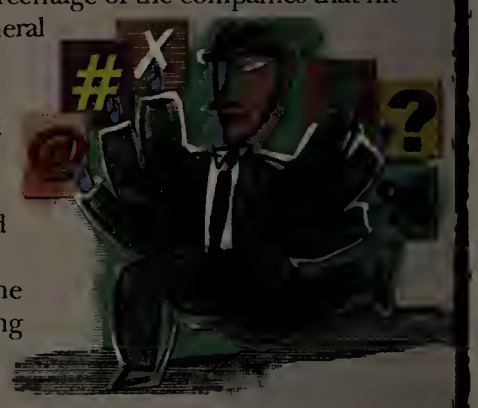
'NET BUZZ

The latest on the Internet/intranet industry

By Chris Nerney

IF ALL ELSE FAILS, THERE'S POWERBALL As readers can see from the story on venture capital investing in this issue, there's more money available than ever for high-tech start-ups. But that doesn't mean any fast-talker with a laptop slide show and a product idea can swagger into a roomful of venture capitalists and emerge with a seven-figure check, a leased BMW and a few new board members.

Venture firms still fund only a small percentage of the companies that hit them up for cash. **Jim Breyer,** managing general partner of **Accel Partners,** offers some interesting numbers from the past year.



"In the last 12 months Accel has logged in 5,000 business plans," Breyer says. "Of those we did due diligence on 200 — meeting with management, etc. We ended up investing in a dozen companies."

In other words, one quarter of 1% of the start-ups pitching Accel for venture funding in the past year were successful. That's one of every 417 companies.

SILVERSTREAM SNAGS $23 MILLION If deep pockets are a key to longevity in the crowded Web applications platform market, start-up **SilverStream Software** may be around for awhile.

The Burlington, Mass.-based developer of a Java-based platform for business applications has secured $15 million in financing from a mix of internal and external investors.

Coupled with $8 million from a previous round of financing, SilverStream has raised $23 million this year. The company was founded in June 1996 by former **Watermark Software CEO David Skok.**

SilverStream released a beta version of its debut product, also called SilverStream, last June. The commercial release is expected by year-end.

PREPARE TO BE DEPRESSED *"It's belt-tightening time at the old company, ladies and gentlemen. Time to get lean and mean. There's too much competition around to allow for padded payrolls and unnecessary expenditures. You, over there, do you really need that desk and chair to get your work done? Your sloth makes me ill. All of us will have to share the pain, and that includes me . . ."*

Many of us have heard that speech before, but have you ever wondered just how much pain your boss is feeling and how much of anything he or she is sharing?

Now you can measure the true extent of your boss's suffering with the help of **EDGAR Online.** The Web site just launched a service that allows users to search the **U.S. Securities and Exchange Commission (SEC)** filings for an executive's compensation package, including salary, bonuses, stock ownership — even details of any "golden handshake" arrangement.

The site is at http://people.edgar-online.com/people.

INTERNET HISTORY, VOL. 1 While the Internet may seem pretty new — after all, almost everyone who helped start it is still alive — some folks think it's old enough to merit a museum exhibit.

The *History of the Internet* debuted at **SC97,** a conference on high-performance networking and computing held in San Jose, Calif., last week. The showcase is subtitled "An exhibit: In celebration of packets," proving once again that these days, everything is marketing.

The history explores the humble beginnings of the 'Net in the late '70s and its evolution from the plaything of a small number of geeks to the plaything of millions of geeks.

Oddly enough, the lure of the exhibit was not enough to allow SC97 to outdraw **Comdex/Fall '97,** but that's why the street-corner Elvis impersonators get paid the big bucks by the Las Vegas convention center.

Fortunately for the industry types who opted to bake in the desert sun, the Internet history exhibit will be on permanent display at the Computer Museum at Moffett Federal Airfield in Mountain View, Calif.

Today we give thanks to the many readers who have sent us Internet- and intranet-related news over the past year. Don't be afraid to offer us seconds. Contact Chris Nerney at (508) 820-7451 or cnerney@nww.com.

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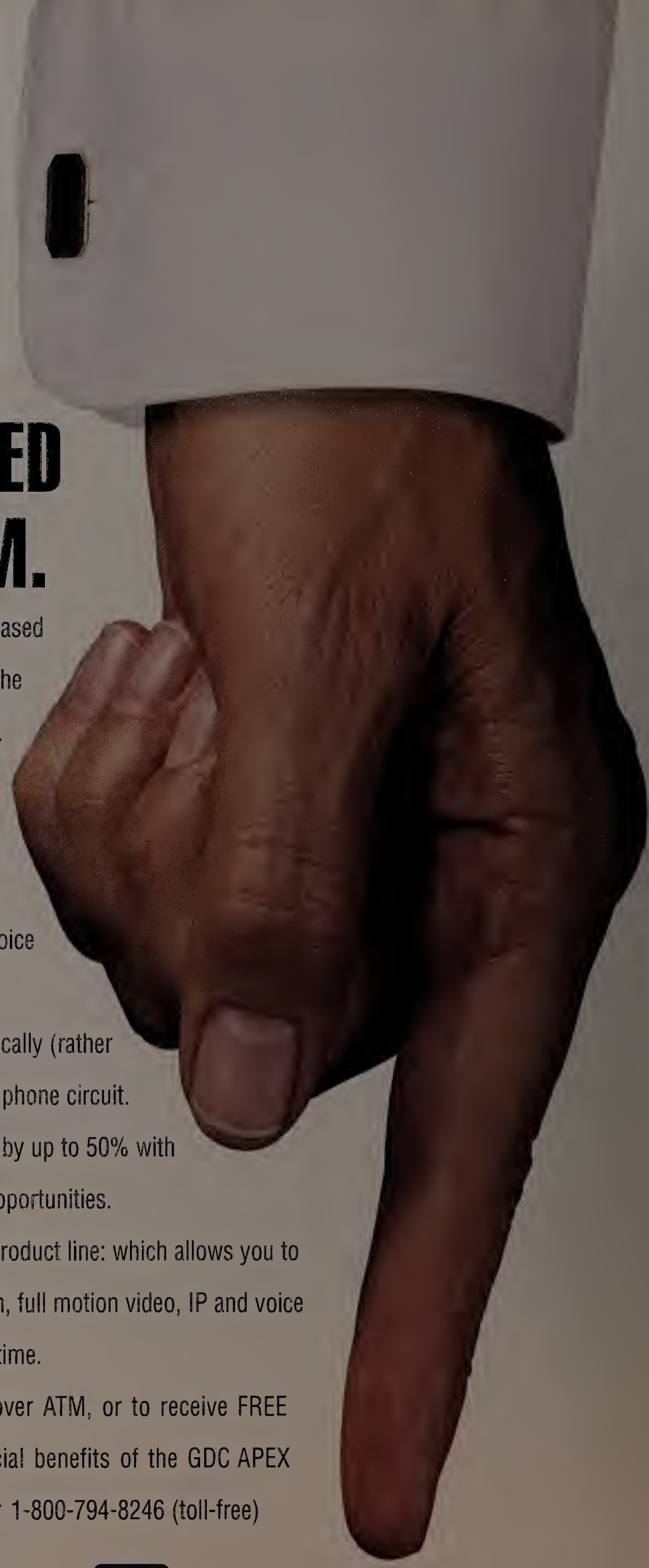

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